United States

Circuit Court of Appeals

For the Ninth Circuit.

THE DETROIT COPPER MINING COMPANY OF ARIZONA, a Corporation, AND THE ARIZONA COPPER COMPANY, a Corporation, *Defendants-Appellants,* vs. THE MINE AND SMELTER SUPPLY COMPANY, a Corporation, *Complainant-Appellee.*	No. 2291.

Appeal from the District Court of the United States for the District of Arizona.

Brief for the Appellee

GEORGE L. HODGES,
D. EDGAR WILSON,
Solicitors for Complainant-Appellee.

Statement.

EXHIBITS EXPLAINED.

A large number of paper exhibits, drawings and photographs were introduced into the record, in connection with the depositions taken in support of the issues, which together with a number of physical exhibits, and a bound volume, entitled "Book of Complainant's Paper Exhibits, Drawings and Photographs," containing reproductions of said paper exhibits, etc., arranged in order, have been transmitted to this Court.

For the convenience of the Court, in referring to exhibits other than physical exhibits, we will refer to the pages of said book of exhibits, upon which the same will be found, designating the same as "Ex. R." All other references will be to pages of the official printed record on file and will be designated as "R."

The claims of the Wilfley patent in suit (Nos. 1, 2 and 7) appertain wholly to the concentrating surface or deck of the ore concentrating table of the patent.

The following Complainant's exhibits illustrate the precise construction of the drawing (Fig. 3) of the Wilfley patent, wherein what are called Z-bar riffles are illustrated, referred to in the specification of the patent as "*an* embodiment" of the invention, viz: Nos. 4 (page 4); 77 and 77-A (pages 473-4); 94 and 94-A (pages 537-8); 95 and 95-A (pages 541-2); 96 and 96-A (pages 545-6); 97 and 97-A (pages 549-50); 98 and 98-A (pages 553-4), of Ex. R., and Exhibit Model No. 65.

The following Complainant's exhibits illustrate the form of construction practiced by Complainant commercially, having tapered riffles, viz:

Nos. 1 (page 1); 2 (page 2); 66 (model), and photograph exhibits Nos. 8 (page 13); 85 and 85-A (pages 505-6); 86, 87 and 86-87-A (pages 509-12); 88 and 88-A (pages 515-16); 89 and 89-A (pages 519-20); 90 and 90-A (pages 523-4); 91 and 91-A (pages 527-8); and 92 and 92-A (pages 531-2), Ex. R.

The following Complainant's exhibits illustrate defendants' construction, which is alleged to infringe, viz:

Nos. 5 (page 11); 6 (model Deister Table No. 2); 7 (Combination Model); 104 and 104-A (pages 571-2); 105 and 105-A (pages 575-6); 106 and 106-A (pages 579-80); 107 and 107-A (pages 583-4); 108 and 108-A (pages 587-8); 109 and 109-A (pages 591-2); 113 (page 606); 68 (full sized Deister Table deck).

NATURE AND PURPOSE OF ORE CONCENTRATORS OF THE TYPE HERE INVOLVED.

Ore concentrators of the type here under consideration are intended to be used in the concentration, by the more or less complete separation of the valuable metallics from the waste or gangue with which it is associated in its natural state, of finely crushed pulps of ores containing such metallics and waste or gangue material, varying in size from about 1/20-inch in diameter to the finest particles, which are, by the process of crushing, to a very great extent, freed from each other, thus permitting their being dealt with in concentration and separation by the use of water currents on a vibrating con-

centrating surface in accordance with the sizes and specific gravities of the particles. The problem to be solved in this type of concentrators being as to how means should be provided for saving and separating the valuable particles from the waste particles, which, due to shape, size and gravity, are most difficult to disassociate, requiring repeated opportunity of selection and repeated subjection to a stratifying and washing action, while maintaining sufficient capacity to render the operation profitable.

The means most naturally effective in accomplishing the saving of the doubtful or evasive particles of valuable metals, is one which gives repeated opportunity of selection by repeated subjection to conditions which are most favorable to such selection, a repeated mechanical washing (or panning, it would be called, if done by hand use of the common device known as the miner's pan) by mechanical means of construction and adjustment of parts in combination.

At different times considerable strides have been made toward attaining such mechanical results, each step made to some extent disclosing and seeking to make available conditions which, when recognized and understood, were sought to be utilized and taken advantage of by subsequent experimenters and inventors, but it remained to Mr. Arthur R. Wilfley *to discover a principle and make a machine* which was *the first to perform new definite functions* and to so apply the same, taking definite and intelligent advantage of precedent conditions disclosed and taught by the prior art, as *to produce both*

increased efficiency and capacity in the practice of ore-dressing by its use. That machine is the machine of his patent in suit and the machine also of Complainant's commercial construction, which embodies the application in practice of Wilfley's said patented invention.

ISSUES INVOLVED AND COMPLAINANT'S POSITION AS TO SAME DEFINED.

The Defendants in the cases here on appeal, rest their defenses and seek to avoid infringement, on the assumption that the invention of the Wilfley patent in suit is *an extremely narrow improvement in an old art.* They allege in their answers that "such concentrators and concentrating tables had been made and patented and used in many *forms* before the said Arthur R. Wilfley made the invention or produced the apparatus described in said patent 590,675," and that inasmuch as the invention described and claimed "was for *a narrow and specific improvement in an old art,* said patent is to be *construed and limited accordingly,* and that it must be taken to apply only to *apparatus covered clearly and closely by its specifications and claims,* and that the Defendant has never owned or used any ore concentrators or concentrating tables covered by the claims of said patent *so construed and applied"* (pages 46-48 R.).

In their printed brief, filed in this Court, counsel for these Defendants assumes that the issues are limited "to the *configuration* upon the surfaces of the two tables" (page 8), based upon the assumption that the invention of the patent appertains only to improvement in the matter of "form" and "configuration" of what

has gone before. The matter of substance, of new principles applied and new functions performed by the machine of the invention as patented, is wholly ignored.

Complainant's contention is that the invention of the patent, represents a great advance in the art, that it discloses the application of principles, and the performance of functions never before applied in the art, and that whether we regard Wilfley as a "pioneer" or an "improver", he is a *leader* and not a *follower,* with respect to the combination of the structural elements which were the first to apply those principles and perform those functions, and that the claims of his patent are, therefore, entitled to an interpretation commensurate with the stride which he has made in the art, and with the margin of his invention.

Argument.

THE WILFLEY PATENT—INVENTION THEREOF OF PRIMARY CHARACTER AND ADVANCED STRIDE IN THE ART AND ENTITLED TO BE SO CONSTRUED.

We will first briefly outline our position stated in the above heading, and later elaborate thereon in considering the questions presented in their respective details.

We contend that the invention of the Wilfley patent in suit is a *primary invention,* which *performs a function or functions never performed by any earlier invention,* and that as such it covers the apparatus used by the Defendants.

Walker on Patents, Sec. 354, pages 300-301 (3rd Ed.)

We are not seeking constructively to expand the claims of the Wilfley patent, but are *resisting a very narrow construction* of them, which would render the patent valueless, and we insist that—

> "That interpretation which sustains and vitalizes the grant * * * * should be preferred to that which strikes down and paralyzes it."

Nat. Hollow B. B. Co. vs. Interchangeable B. B. Co., 106 Fed., 701;
Walker on Patents, 169 (3rd Ed.)

It does not necessarily follow from the fact that the

claims of a patent describe *a specific form* of construction of a machine or part, that the inventor is limited to that *form,* but it depends upon his expressed intention, and *the scope of his actual invention.*

Kings' Co. R. & F. Co. vs. U. S. Cons. S. R. Co., 182 Fed., 59 (C. C. A., Ninth Circuit, 1910);

Andrews Wire and Iron Works vs. Wilson Mfg. Co., 199 Fed., 798 (Sept. 25, 1912).

"*Elements* in *combination* of a patent *should be read with reference both to the structure* AND THE FUNCTION GIVEN IN THE DESCRIPTION *of the invention*" and "FORM *is material* ONLY SO FAR AS IT IS ESSENTIAL TO THE OPERATION, OR INDISPENSABLE *by reason of the state of the art, to the novelty of the claim.*"

London Mach. Co. vs. Strickler, 195 Fed., 751 (C. C. A., Seventh Circuit, Jan. 2, 1912).

And:

"Where a claim includes a specific element in a specifically limited *form,* where *such limitation is not* REQUIRED *by the general terms of the patent,* or *by the state of the prior art,* the Court *may* construe the claim, nevertheless, *with a scope commensurate with the invention.*"

Metallic vs. Brown, 104 Fed., 345;

McCormick vs. Aultman, 69 Fed., 371;

Reece vs. Globe, 61 Fed., 958;

Devlin vs. Paynter, 64 Fed., 398;
Electric vs. LaRue, 139 U. S., 601.

Whether we adopt the designation "improvement" or "pioneer" for an invention is not material. The test is, "what advance in the art has been made?" What is the "margin of invention?"

Nat. Hollow B. B. Co. vs. Interchangeable B. B. Co., 106 Fed., 701;
Metallic Extraction Co. vs. Brown, 104 Fed., 345;
Brammer vs. Schroeder, 106 Fed., 918.

An "improver" may show a greater advance than a "pioneer".

McSherry vs. Dowagiac Co., 101 Fed., at page 722, citing Penfield vs. Chambers, 92 Fed., 639.

Mr. Wilfley's invention is primary because it performs a function NEVER PERFORMED BEFORE, and *which revolutionized the practice of ore concentration.*

A recent decision defines "a pioneer patent" as "one covering *a function never before performed,* a wholly novel device OR *one of such novelty* and *importance as to make* A DISTINCT STEP IN THE PROGRESS OF THE ART, as distinguished from a mere improvement or perfection of what has gone before."

Autopiano Co. vs. Amphion Piano Player Co., 186 Fed., 159 (C. C. A., 2nd Circuit, March 15, 1911).

We think the record shows that Mr. Wilfley's patent invention is more than a mere "improvement" of what went before, since "*it covers functions never before performed" in this art,* and *is* "one of such novelty and importance as to make *a distinct step in the progress of the art,* as disinguished from a mere improvement or perfection of what has gone before." And it, therefore, is a "pioneer" invention as defined in the case last cited, and *in considering the question of infringements of the claims of the patent in suit, they are entitled not only to broad and liberal construction, but to a wide range of equivalents.*

Dr. Richards, Professor of Metallurgy and Mining Engineering in the Massachusetts Institute of Technology, in referring to this invention of Wifley, says that he "considers that the Wilfley table was *a great advanced stride and initiated a new era in concentrators"* (page 143 R.). That his arrangement of riffles rendered the table "practically automatic"; that "Wilfley's invention increases the *capacity* very largely, and the *efficiency* * * *, and there became a demand for it in the concentrating mills. Its use spread all over the United States as well as abroad" (page 151 R.).

The witness Callow states that "the Wilfley table has covered the entire field of ore-dressing and is the predominating type of machine for the treatment of medium sized material," that it is *one of the most important inventions made in the mining industry* (page 181 R.); and that "all concentrating tables that have come out in competition with and to do the work of the Wilfley table have been patterned after the Wilfley in-

vention; *an embodiment of the Wilfley idea appears to be essential to efficiency and capacity.*" (Page 184 R.).

Patentee Wilfley says that his combination made the difference between paying or not paying (profit or loss) in the ores treated. (Page 167 R.).

The patent expert witness Hodges states that Wilfley was a leader, and his invention emphatically an advanced stride in the art of ore concentration; that all the art which is in anywise similar to his construction has originated since the Wilfley patent—none before it, and that Wilfley made a radical departure from his predecessors in the art. (Pages 233-4 R.).

The Defendants proceed upon the assumption that the patentee Wilfley sought to patent as his invention a peculiar and specialized *form* and disposition of riffles, *per se,* and a smooth surface of peculiar and specialized *form* or *configuration, per se,* as if the mode of cooperation of the two surfaces were not part of his claimed invention.

Whether these elements were old or new is immaterial.

> Niles Tool Works vs. Betts Co. (C. C.), 27 Fed., 301.

> "The *invention lies in the combination* and *not in the elements.* These several elements are brought into combination *to co-act in such a manner as to produce a new result,* or *a better result,* than had been before achieved."

> Beckwith vs. Malleable Iron Range Co., 174 Fed., 1001, 1007.

This distinction is clearly pointed out by the U. S. Supreme Court in Elizabeth vs. Pavement Co., 97 U. S., 126.

DISCLOSURES IN THE PRIOR ART, TAKEN ADVANTAGE OF AND MADE MORE EFFECTIVE BY THE WILFLEY INVENTION.

In order to best understand and appreciate the Wilfley patented invention, the practice thereof in Complainant's commercial construction, and the functional co-operation of its elements, which it is contended are being infringed by Defendants' concentrators, it is deemed expedient here to make reference to certain pertinent developments in the prior art, as applied to the type of ore concentrating tables having a surface to which was imparted a movement or vibration (produced by means of various mechanisms) and a transverse inclination over which was caused to flow a film or sheet of water distributed at the upper end or side of the inclined surface by means of which pulps being fed upon the upper or feed side, near the mechanism side or end, were acted upon by the impelling forces of the mechanism operating in one direction, and the carrying power of the water applied operating at right angles to the impelling mechanism.

Rittinger.

Herr von Rittinger, about 1867, disclosed and practiced this form of construction, using a smooth table-deck or concentrating surface, in the operation of which the material (pulps) fed upon the surface was impelled in one direction by a cam, spring and bumping post, the

table surface being inclined in a transverse direction and at right angles to the movement imparted, in which the result of the operation of the two forces is to cause *a diagonal arrangement of the material in diagonal bands,* the angle of the diagonal of travel depending upon the inclination of the table, and the bands being disposed in the order of the respective specific gravities of the constituents of the pulps.

Dr. Richards testified that he is familiar with the von Rittinger table; that it has no riffles on it, and lacks the automatic action which the Wilfley possesses; that Wilfley put his riffles on with the diagonal ending—*the advancing terminals,* and so added to the strength of the machine in getting an automatic control of the line of change of detention by such means (pages 143-4 R.).

Dr. Richards explains what he means by the control of the line of change of detention, which takes place along the diagonal line of *terminals* of the riffles of the Wilfley construction, where the quartz no longer can be detained upon the table except in minute quantities (pages 144-6 R.) as illustrated by Complainant's photograph Exhibit No. 8 (page 13, Ex. R.).

He says that the great advance made by Wilfley in his patent lay in the fact that he placed riffle cleats across the flow of water, and *that he terminated* these riffles by *advancing terminals, bringing each succeeding tip nearer to the concentrates discharge end of the table.* The whole set of *advancing tips forming a diagonal* on the surface of the table.

He illustrates by comparing operations in which he participated, of a table having no riffles on the surface

(except six at the feed side) which, so long as the table was fed with perfect evenness as to quantity, quality, size and composition of pulp and quantity of feed and wash water, seemed to be successful, but that by a variation in either of the factors named the work was ruined, the line of change of detention fluctuating so that the concentrates ran into the tailings box or the tailings into the concentrates box, and that to operate such a table with any success at all, it would have been necessary to stand by it, just as the driver of an automobile does, and to control the water, the feed, the slope of the table, etc., constantly in order to maintain that line, which would be impossible in a mill. That the table *must* be automatic; the table so operated he considered a failure.

That when the riffles of the Wilfley construction were replaced with *terminals advancing along a diagonal line* the table was restored to having a very perfect control by mechanical means of this line of change of detention, and the table *immediately became automatic,* requiring an attendant to visit it from time to time, but *practically automatic* (pages 148-51, R.).

On cross-examination Dr. Richards referring again to Complainant's photograph Exhibit No. 8, says, that the *ends* or *terminals* of the riffle cleats *toward the concentrates discharge* end IS THE ESSENTIAL EFFECTIVE PORTION in the operation of the Wilfley table * * * because it is the point at which the support of the gangue grains is removed and the flow of the wash water from that point on has sufficient force to prevent nearly the whole of the quartz or gangue from being detained on the surface of the table (page 159, R.).

The patentee Wilfley (at pages 168-70, R.) describes his experiments on smooth top tables of the von Rittinger type and the effect of his addition of riffles where the same were most effective and omitting riffle protection where their absence was desirable to attain the best efficiency and capacity, which finally developed the *diagonal termination of the riffles.* He operated a table with transverse inclination without riffles which developed the natural diagonal line—the co-efficient of the forces exerted by the mechanism and wash water, and then adopted the protecting surface (of riffle cleats) to one side of this diagonal line, and allowed the other to be exposed, giving a constantly stratifying and catching quality to one side and cleaning effect on the other side of this line of separation; also giving at all times the opportunity for a particle to retreat to the stratifying plane where it might be retained; that he discovered the value of the protection and support of a series of riffles *adjusted with reference to this diagonal line,* and the repeated washing action, which he describes in detail, and which is also described in the specification of his patent at lines 7 to 56, page 2 thereof (Complainant's Exhibit 4, page 8, Ex. R.), which he says was accomplished *by the advancing terminals of riffles without regard to any particular form* or *shape of riffle cleats.* In his specification he says: *"I do not limit the invention to any special construction of riffle"* (lines 64-6, page 2 Wilfley Patent, Ex. 4, page 4, Ex. R.).

He says that he made experiments in varying the direction of line of the diagonal terminals of the riffle cleats, and found that by such changes the riffles *con-*

trolled the diagonal line of separation of the material within a certain range; that with the smooth-top table of the von Rittinger type, the line of separation (between concentrates and tailings) is hard to control so as to save concentrates and reject tailings, the line varying materially in case of variations of water, quantity of mineral in the pulp and numerous other variations that necessarily occur in a mill, rendering it almost impossible to operate such a table in a practical way, even though one would stand at the controlling lever every moment of time and thus make a perfect line of separation, the work is not good.

The witness Callow says that the effect of the riffle cleats on the Wilfley table is to restrain or hold back the material in the line of motion; that *the effect of the diagonal arrangement of riffle terminals is the controlling* or *governing effect upon the line of separation between the gangue and the mineral products* within certain limits, *automatically controlling this line of separation on the table;* that this automatic control has contributed most to the use of the machine in practice. (Pages 181-2, R.).

Dr. Richards very graphically illustrates, by reference to a series of photographs and accompanying diagrams of tests and demonstrations of table operations conducted by him, just what he means by automatic control of the line of detention. For convenience, reference will be made to said exhibits as embodied in "Book of Complainant's Paper Exhibits, etc.," wherein the same are reproduced, the originals thereof having been duly

certified to and being in the files in this Court as previously stated.

On page 214 R., Dr. Richards says that Exhibit 69 (page 449, Ex. R.), shows the effect of irregular feed upon a table-deck devoid of riffles; on page 215, R., that Exhibits 70 and 71 (pages 451 and 453, Ex. R.), show that when perfectly and evenly fed, a satisfactory separation is possible, but that such evenness as to quality, quantity, etc., can not be counted upon in mill practice; that Exhibit 72 (page 455, Ex. R.), should be examined in connection with Exhibit 71, showing what happens if the amount of feed is changed from the rate of one ton per hour as shown in Exhibit 71, to one-half ton per hour as shown in Exhibit 72, in the latter case all the concentrate departing with the gangue over the tailing side of the table instead of over the concentrate end as in the case of Exhibit 71.

He then proceeds (pages 215-17, R), to illustrate the effect of placing riffle cleats upon the surface, the terminals of which advance diagonally in conformity with the Wilfley patent invention, by reference to Exhibits 73 and 74 (pages 457-461, Ex. R.), the conditions of operation being identical except as to quantity of feed, the first being fed at the rate of one-half ton per hour and the second at one ton per hour; in both cases, notwithstanding the rate of feed, the line of change of detention, or line of division between the zinc middling and the quartz tailing being exactly coincident with the diagonal line of advancing terminals of the riffles; that in comparing Exhibits 73 and 74 the additional half-ton fed to the latter has been disposed of by increasing the

width of the concentrate bands, and also increasing the width of the silica band. He then further illustrates the mechanical control of the diagonally advancing riffle tips (pages 217-19, R.), by materially changing the angles of the diagonal alignment thereof, as shown in Exhibits 75 and 76 (pages 465-70, Ex. R.), which show that all conditions of operation being identical, except as to such changes of alignment, the location of the advancing riffle-tips controls the location of the line of detention or separation between the middlings and gangue coincident therewith.

Referring (pages 218-19, R.) to Exhibit 77 (page 473, Ex. R.), which illustrates the table of Fig. 3 of the drawings of the Wilfley patent in suit, having Z-bar riffle cleats with diagonally advancing terminals, he says that this figure shows the control of the line of change of detention along the line of advancing terminals very perfectly accomplished.

The attention of the Court is specially directed to this photograph Exhibit 77 which also shows, photographically, the dropping down from riffle tip to advancing riffle tip along the diagonal terminals of the series of riffles, of the superimposed gangue containing particles of mineral, which are thus repeatedly subjected to the rewashing from advancing riffle tip to advancing riffle tip, as described in the specification of the patent, to which attention has been hereinbefore specifically directed.

Comparing (pages 219-21, R.) said Exhibit 77 with photograph Exhibits 78, 79 and 80 (pages 477-86, Ex. R.) he says that in the Exhibit 77 having the riffles with ad-

WHAT PATENTEE WILFLEY HAS DONE, AND THE FEATURE OR FUNCTION OF "MECHANICAL CONTROL" BY THE RIFFLES IN THE COMBINATION OF THE WILFLEY INVENTION, AND ITS IMPORTANCE.

It seems obvious that it is *the evasive particles of valuable metals* in the ore pulp, which all inventions and improvements in the art are most concerned in recovering, and in providing for the recovery thereof by means which develop sufficient capacity to render the operation profitable.

It has long been known that the finest particles of heavy metals, so fine as to be easily put in suspension in water by agitation, could be recovered and saved by delicate manipulation by hand, by repeated panning or washing in a miner's gold-pan, in the hands of a person skilled in the operation, but it is apparent that such a process could not be profitable in the saving of the baser metals, or the exceeding small percentage of precious metals frequently found in association with or included in its matrix of silica or other waste matter, or contained as included grains or particles therein. Mr. Wilfley has sought, and in his combination of the elements of his invention has attained mechanically a repeated panning action by a combination of mechanical means adjusted with definite regard to the natural location upon his concentrating surface of the evasive particles of metals, which it is desired shall be separated from their associated gangue or waste in the pulps which shall have

been crushed to a sufficient fineness to free them, so as to permit of their specific gravities being taken advantage of in the operation. The coarser and heavier metals cause little anxiety; they settle into the bottoms of the channels, between the riffle cleats and travel rapidly along, being impelled by the mechanism, and promptly assume an advanced position on the smooth surface of the table, considerably above and in advance of the riffle tips; the next lighter mineral below, etc., until we come to the evasive particles of metal, which cling to their association with the heaviest and most stubborn particles of the waste or gangue, and these particles are located in a diagonal zone which is the zone marked "C" on the smooth-top table surface illustrated by Complainant's photograph Exhibits Nos. 71 (page 453, Ex. R.); 80 (page 485, *Id.*); 73 (page 457, *Id.*); 77 (page 473, *Id.*); 85 (page 505, *Id.*); 97 (page 549, *Id.*); and various of the photograph exhibits. This doubtful material which seeks naturally this relation to the heavier minerals and the lighter gangues, is the material that is specially sought by Mr. Wilfley's invention *to be given a repeated opportunity of selection, to be washed or panned over and over again, by taking advantage of and controlling its naturally attained location on the surface.* It is here in this approximate location or position on the table where it can be dealt with most naturally and most effectively as Mr. Wilfley has demonstrated by his invention, and it is here, and upon and with respect to this doubtful and evasive material, that the specification-described functions of the riffled and smooth surfaces of the Wilfley patent are performed in his commercial construc-

tion and which is clearly elucidated in the specification of the patent, commencing at line 101, page 1 (pages 7 and 8, Ex. R.).

This patent-specified and described function of the machine of the Wilfley invention, of repeated washing by the repeated alternating obstruction and exposure of the material by the advancing riffle tips, is graphically illustrated by Complainant's photograph Exhibit No. 77 (page 473, Ex. R.), which illustrates the exact construction in detail of the specification and drawings of his patent.

There was something that Wilfley did by means of the structure of his patented invention, which, however, he did not describe in the specification of his patent. *He mechanically controlled the diagonal bands or zones of material and the line of separation between the particles desired to be recovered and saved and those which it is desired to reject,* to a practical and valuable extent by mechanical means which operate automatically—to an extent which substantially overcame the defects of the incomplete control which was theretofore available by hand adjustment and the constant attendance of the operator. *He so adjusted and disposed his riffles upon the table deck as to locate,* within a practical range, and *to maintain and hold the zone of doubtful material containing the particles which required the repeated opportunity for selection by the repeated washing described in the patent specification, in such a position upon the table-surface as to enable the same,* or more properly, we may say, *to compel the same to be subjected to such repeated washing as a continuous operation.*

But by the settled rules of the patent law, the fact that only the function of "repeated washing" is described in the patent specification, does not prevent the inventor (and his assigns) "from reaping the advantage of *any other function within the claims as properly construed, available without a modification of the machine which involves the use of further inventive faculty,* whether known to him, and omitted in the specifications without fraud, or not known to him."

Reece Button-Hole Mach. Co. vs. Globe Button-Hole Mach. Co., 61 Fed., 958, 966 (C. C. A., First Circuit, April 20, 1894);

Long vs. Pope Mfg. Co., 75 Fed., 835 (C. C. A., First Circuit, July 14, 1896);

Dunlap vs. Willbrandt Surgical Mfg. Co., 151 Fed., 223 (C. C. A., Eighth Circuit, November 30, 1906).

The rule is clear that ordinarily a patentee who is first to make an invention is entitled to his claim for all the uses and all the advantages which belong to it, so far as the new application does not itself involve further invention.

Roberts vs. Ryer, 91 U. S., 150, 157;
Stow vs. Chicago, 104 U. S., 547, 550;
Miller vs. Mfg. Co., 151 U. S., 186, 201;
Electric Co. vs. LaRue, 139 U. S., 601.

The foregoing valuable functions were accomplished by the very simple means of adjusting his riffles to terminate on a diagonal line, as illustrated in the patent, and

also in the commercial construction. These means are so very simple of construction as to the essential concentrating surface of the table, that a kindergarten pupil of average development could make a perfect sketch of it.

WILFLEY INVENTION NOVEL AND OF A BROAD AND MERITORIOUS CHARACTER.

Mr. Wilfley was the first to discover, design, construct and patent a mechanical combination, which was the first structure known to the art in which it is classified which performed the two functions of automatic mechanical control and repeated washing which has been particularly described and illustrated as we have shown, and that the same was effective in the accomplishment of greatly increased efficiency and capacity in the concentration of ores. It is not contended that concentration upon smooth surfaces was new at the time Wilfley applied for his patent in suit. Such surfaces were undoubtedly used long prior to the Rittinger invention, and the same is undoubtedly true of the use of riffles as used by miners in placer mining by the process known as sluicing. The distinctive feature of the Rittinger table was *motion.* The Rittinger table primarily solved the problem of *motion,* there was no step disclosed in that construction in solving the problem of development of the full efficiency and capacity of the *table top.* This is no problem for a mere mechanic to solve, from anything obvious in the Rittinger construction. It was for the *inventor* to solve.

There was nothing in the prior art which suggested

the Wilfley *adjustment* and *arrangement* of riffles; it was not *a riffle* that was required, nor *a smooth surface,* or, broadly speaking, *a co-operation of the two,* it was just *such* a co-operation of riffles and smooth surface as Mr. Wilfley invented and discloses, that solved the problem, and nothing but *a high order of invention* could develop and disclose it. The invention lies in the combination not in the elements.

Beckwith vs. Malleable Iron Range Co., 174 Fed., 1007;

Citing: Elizabeth vs. Pavement Co., 97 U. S., 126, 144.

There is nothing in the prior art which teaches or suggests the two new and valuable functions of the Wilfley patent structure, which we believe is conclusively shown by the record.

The Blatchly and Kustel paper invention and patent, the drawings of which appear on page 99 of appellants' brief, and the teachings of which are embodied in the construction illustrated by Complainant's photograph Exhibits 78 to 85, inclusive (pages 477-502, Ex. R.) discloses a futile attempt to improve the structure of Rittinger, but it does not develop or disclose or teach a construction which either anticipates the Wilfley mechanical construction or the performance of either of the valuable functions of the latter. Neither the Rittinger nor the Blatchly and Kustel disclosures suggest a solution of the problem solved by Wilfley, or helped one iota in that regard.

Nor does the Lampert patent (page 102, Appellants'

brief) anticipate, disclose, or teach anything of the kind, as has been judicially determined by Judge Welborn, in the U. S. District Court, Southern District of California, Southern Division, on March 12, 1912, in a case based upon the Lampert patent, and at least two other adjudications in cases in which Lampert was cited and considered.

The Wilfley patented table and construction represents a type of concentrating device new with him; his unaided stride in the art involved more than a mere change of design. It was invention of the highest order, and the recognition of its merits by the public, and the immediate repeated and continued efforts of later experimenters and inventors to make its distinctive and characteristic construction a basis for attempted patentable improvements, as evidenced by the numerous subsequent patents issued for claimed improvements, stamps it as *novel* and *patentable.*

The validity of the Wilfley patent in suit has been adjudicated in a suit in which the Rittinger, and Blatchly and Kustel, and Lampert patent disclosures were considered, and the claims 1, 2, and 7 thereof, which are here involved, *given a liberal construction.*

> Wilfley vs. Denver Engineering Works Co., 111 Fed., 760 (C. C., Dist. Colo., November 5, 1901).

The only patents introduced by Defendants in this record were introduced and examined in the case last cited.

That case involved alleged infringement in a con-

struction having *"physical"* riffles extending over the entire length of the table, but made shallower, *relatively* along a diagonal line corresponding to the diagonal terminals of the Wilfley patent. Appellants' counsel have inserted the drawings of the Cammett & Shepard construction involved in that case at page 112 of their brief.

Judge Riner, in the opinion in that case, says: "The prior art discloses no combination of the elements of the Wilfley patent, *in the way* which he describes * * * this *arrangement* was *new*, and the testimony clearly establishes, *useful and valuable.*" He also says: "The *merit* consists of *being the first to make the* APPLICATION and *the first to show* HOW *it can be made,* and the first to show that there is utility in making it." He further says: "The minds of inventors and those interested in the art had been specifically directed to the question of the separation of the values from the gangue for many years prior to the Wilfley patent, yet neither the Defendants *nor anyone else* conceived the idea that this result *could be best accomplished* by subjecting the pulp upon the table to the *repeated interference of the riffles placed upon the table in the manner described in the patent,* and *at the same time* and *in the same manner protect the values lower down on the table from the cross-wash of the water laden with the waste from the riffles higher up"* (page 762), and that "the distinctive arrangement of the riffles upon this table has nothing to do with the strata which lies at the bottom of the head end channels, and which find their way across the table to the tailings (concentrates) box. The *primary function* of the table, as shown by the evidence, *is that which concerns the mid-*

dle strata, which are treated by the interposing of riffles under the surface adapted to receive the mineral, and sufficiently 'smooth, plain or unriffled' for the purpose set forth in such a way that the *values are caught and restratified, and directed again to the tail of the table.''* (Page 763.)

''Upon the withdrawal of the protection of the elevated riffles, the relative resistance of the specific gravities of the various strata cause them to take different positions *in diagonal bands,* in the same order as that in which they were superposed * * * and *it is the taking advantage of this diagonal arrangement, by the adjustment of the riffles, with reference thereto, that is new and valuable in the plaintiff's patent.''* (Page 763.)

And to accomplish ''a new and useful result'' within the meaning of the patent law, *it is not necessary that a result before unknown should be brought about,* but *it is sufficient if an old result is accomplished in a new and efficient way,* and, if the *value* and *effectiveness* of a machine *are substantially increased by a new combination of elements, such combination is patentable.*

St. Louis Street Flushing Mach. Co. vs. Am. Street Flushing Mach. Co., 156 Fed., 574 (C. C. A., October, 1907);
Krajewski vs. Pharr, 108 Fed., 519.

A new combination of old elements or devices whereby *an old product is attained in a more efficient and economical way,* may be protected by patent.

Am. Steel & Wire Co. vs. Dunning Wire & Fence Co., 160 Fed., 108 (C. C., Iowa, 1908).

A new combination with a new mode of operation, may be invention, even if all the parts thereof are old, and *even if the* FUNCTION *of the combination is old.* While a new combination of old elements *often appear simple,* where there was *a prior defect* which was *thereby overcome, and the new device was immediately recognized and went into exclusive and general use,* it is persuasive that *more than mechanical skill* was required in bringing together the elements in such a combination to each other as to bring about the success.

Eagle Wagon Works vs. Columbia Wagon Co., 181 Fed., 148 (C. C. E. D., Pa., Aug. 3, 1910).

The attention of the Court is called to the fact that there is no evidence in the case at bar that the *functions* of the Wilfley patented invention and construction are old. On the contrary, the record discloses that Wilfley was the first to conceive the function of his patent specification and the first to devise a construction, a machine which has been patented to him, which performs the functions which are shown in the record. The principles and functions of a machine are not patentable, but the machine which first applies the principles and performs the function is patentable, if it has utility and novelty.

Invention *consists of the device* of the patent and *not in the conception of the principle to be utilized.*

Sewall vs. Jones, 91 U. S., 171.

But the *conception* must precede the *adaptation* to practical use.

The mere citation of patents alleged to either anticipate or narrow the art, may in many instances, and in the case at bar, we contend, does strengthen Complainant's position by showing that the trade has sought and experimented in vain for what Patentee Wilfley finally accomplished.

> Forsythe vs. Garlock, 142 Fed., 461, 463-4, (C. C. A., Nov. 5, 1905).

After all is said "Nature is the real, first and original inventor—man simply assembles and combines facts and applies them to beneficial uses," and when he has made such a combination and application as to "advance the useful arts" he is entitled to the fullest protection of the patent laws.

Patents granted under the laws of the United States, pursuant to the provisions of Article 1, Section 8 of the Federal Constitution, are *grants made in consideration of discoveries which* "promote the progress of science and useful arts," and are to be construed liberally so as to effect their real intent.

> Bossert Electric Const'n Co. vs. Pratt Chuck Co., 179 Fed., 385 (C. C. A., N. Y., May 23, 1910).

> "The *meaning of letters patent, like other grants* or written instruments, must be ascer-

tained by the language employed, *as applied to the subject-matter.*"

Krajewski vs. Pharr, *supra.*

We believe that the problem which Mr. Wilfley solved, and which baffled operators for thirty years, called for invention and ingenuity, and the success which it has attained and the recognition given by the public, stamp it as an invention, new, useful and patentable.

In none of the patents or publications introduced on behalf of Defendants in this case, have they disclosed or pointed out a single structure which performs either of the new and valuable functions, the performance of which in the Wilfley patented invention and in the Wilfley commercial construction as well, is demonstrated by the record and exhibits in this case. Nor have Defendants attempted to show a prior use of either the patent or commercial machine in any form, or the performance of the functions thereof by any similar or equivalent device, or any device combining similar or equivalent elements.

The main questions to be considered in the light of the evidence are:

First. What breadth or scope shall be given the claims of the Wilfley patent in suit, in view of the prior art and the advance made therein, the margin of invention, and in view of the action of the Patent Office in rejecting claims as originally presented and acquiescence of the applicant in such rejection.

Second. Whether or not, having due regard to the scope or breadth of construction and application to practice to which said claims are entitled, the structure or

machine of Defendants, complained of, infringes the claims 1, 2 and 7 of the patent in suit, or either one or more of them.

Thus are presented mixed questions of law and fact.

The first and most important *fact* to be determined is *whether or not Wilfley was a* LEADER or a FOLLOWER with respect to his patent invention? Has he made a valuable invention which marks an advanced stride in the art?

That fact having been resolved in the affirmative clearly entitles the claims of his patent to a construction broad enough to cover the embodiment of other *forms* of physical construction which apply the same principles and perform the same functions in substantially the same way and *a range of mechanical equivalents commensurate with the primary character of the invention,* unless the patentee has been limited to a narrow and specific form or forms by some action of the Patent Office.

Limitation of the Scope of the Claims of the Wilfley Patent by Proceedings in the Patent Office.

With the purpose in view of so narrowing and limiting the scope of the claims of the patent in suit, Defendants, in connection with the deposition of their patent expert witness Browne, introduced a certified copy of the file wrapper and contents of said patent (pages 248 and 265 to 306 inclusive, R.).

This exhibit shows that the *invention* of the subject-matter originally presented, is for a *combination* of elements.

The application shows that the structure of the patent as issued is identical with that described in the original specification as illustrated by the drawing (Fig. 3) accompanying the same, as is clearly apparent from the following (quoting from the original specification):

> "My invention * * * consists of the features hereinafter *described and claimed.* All of *which will be fully understood by reference to the accompanying* DRAWING *in which is* ILLUSTRATED AN *embodiment thereof.*"

"In the operation of *the* machine the material to be treated is discharged in the form of pulp upon the upper left-hand corner of the table (*see Fig. 3*)" and now *quoting from a portion of the original specification cancelled* and for which the substitution, giving greater detail, was made as stated:

> "These mineral particles are, however, gradually moving toward the tail of the table under the influence of the latter's movement imparted by the operating mechanism * * *. *Hence, when the mineral reaches* THE FREE EXTREMITY *of the uppermost riffle, it is, for a brief space of time,* SUBJECTED TO THE FREE OR UNRESTRAINED ACTION OF THE WATER *before passing to the next riffle below.* During this *space of time,* it is deprived of some gangue, which was also caught on the first riffle. The gangue once separated is carried downward by the water, while the mineral is caught by the next riffle and so on."

The foregoing is the part of the specification cancelled.

What we have quoted above describes the function which is more fully and in detail described in the amended specification as being performed by *the* machine, the features (smooth and riffled surfaces) of which are to be understood "by reference to the accompanying drawing of the table (see Fig. 3)." It described the subjection of the material when it reaches the ends of the riffles, for a brief space of time "*to the free or unrestrained action of the water before passing to the next riffle below,* during which brief space of time it is *washed, i. e.,* deprived of some gangue carried downward to the next riffle below and so on from riffle to riffle.

Unless there had been a space beyond these riffles there could have been no such action, and by incorporating an amendment to elaborate on that portion of the table it amounted simply to an amplification of what was expressed * * * and *what the drawing fully illustrated.*

Now as to the original claim 1, which was cancelled, which was, in part, as follows:

1. "*The* transversely inclined concentrating table *having* longitudinal riffles varying in length, etc.," not *a* table but *the* table. What table? The table described and illustrated in the drawing, "Fig. 3"—none other has been referred to. And none other was described or referred to in the specification, drawings or claims originally presented, and *the specification and claims as amended and the claims as allowed adhere to what was originally presented and claimed as applicant's invention, in all respects, though with greater amplification.*

There was no departure by applicant in any regard from what he originally presented and claimed, and *he strenuously adhered to and persisted in the description and illustration of and in prosecuting his claims for the construction which embodied the essence of his invention, and the application of the principles and performance of the new and useful functions which he had conceived and developed.*

As a matter of fact, the numeral 5 was employed originally and has been at all times used to designate the table (see line 32, page 1 of the specification), and the portion afterwards marked with *the letter A was part of the table 5 and in reality need not have been employed at all,* for really the numeral 5 includes it as it refers to the entire table and A simply refers to a portion of the table surface, and there is nothing at all significant in using a letter instead of a numeral. No change whatever was made in the drawing, which means *nothing was added and nothing was taken away by amendment.* Much latitude is given in the prosecution of an application for a patent and the Rules permit the amendment of one part of the application so long as it does not deviate from the disclosure of the other part. In other words, the specification may be entirely rewritten to correspond with what is shown in the drawings as originally filed, and the drawings may be amended to correspond with what was originally disclosed in the specification. That is all that was done. The added description is obviously a mere restatement and re-expression of the features and functions which belong to the table as disclosed.

As to the claims it is true all the original claims are shown to have been cancelled.

The first official action was dated April 19, 1897. It is a very interesting fact that *not one of the three patents referred to in the deposition of Mr. Browne* (page 249, R.) *were cited in this action by the examiner,* and that the amendments which form important parts of the patent as issued, were almost all made June 21, 1897, in response to this rejection of April 19, 1897.

The first official letter dated April 19, 1897, rejected original claim 1 on the prior patent of Gates, No. 415,999, November 26, 1889, referring, also, to the prior patent of Waitt No. 513,489, January 30, 1894.

As a matter of fact, neither of these patents show so much as a riffle. The patent to Gates shows a plurality of mitered troughs constituting a feeder and termed a feeder to the table. But these were not riffles. They are neither called riffles nor have they ascribed to them the functions of riffles, nor could they in any wise be construed to be riffles.

We mention these facts to show that *there was no reason for limiting the original claims nor do we understand that Mr. Wilfley sought to restrict his claims by amendment in view of these patents.* It is not uncommon to recast and restate claims without necessarily limiting them by any means. *In some respects claim 1 of the patent is positively broader than original claim 1 in the language employed,* as for instance, original claim 1 refers to the riffle nearest the upper edge of the table as the shortest and the one nearest the lower edge as being the longest. Claim 1 of the patent specifies that

the riffles vary in length *for the purpose specified,* which means to accomplish the function of the invention.

It is true that claim 1 of the patent introduces the co-operating element, namely, a smooth, plain or unriffled portion extending from the extremities of the riffles toward the tail of the table. But *some such element as this would have been necessarily implied in original claim 1 if it had been retained,* or *otherwise there would have been nothing to co-operate with the riffles set forth in that claim;* and it seems reasonable to assume that *this claim is restated in the language of the patent for this purpose, to express an operative combination of elements to co-act to produce the function of the patent.*

As to the qualifying expression "riffles varying in length *for the purpose specified*" introduced by amendment of August 17, 1897, this did follow after the official letter of July 29, 1897, in which for the first time the examiner cited the patent of *Blatchly and Kustel* against the first three claims, claim 5 and claim 11. But *this did not amount to an acknowledgment or an acquiescence as to Blatchly and Kustel being an anticipation,* for in the first place, we find the same expression in a slightly different form as a part of original claim 1, but which was originally omitted from claim 1 of the patent. In original claim 1 we have the expression, "Having longitudinal riffles varying in length." When claim 1 of the patent was inserted it was omitted, but by amendment it was added as we have pointed out. But the fact that the qualification was in original claim 1 as originally presented does not indicate that its introduction was necessitated by the citation of the Blatchly and Kustel

patent. Quite the contrary. *It indicates an attempt to describe the feature of* ADVANCING TERMINALS *which co-operated with another surface of the table for the purpose specified, namely, to perform the functions of the invention.*

All that Blatchly and Kustel can be said to have is two surfaces, one of which is riffled and the other without riffles. But *that was not and is not the Wilfley invention. It remained for Wilfley to discover the principle of the* ADVANCING TERMINALS DIAGONALLY ACROSS THE TABLE, *thereby utilizing two contrasting surfaces* with gradual withdrawal of protection and repeated catching and rewashing and retreatment of the doubtful and elusive grains at the terminals tips.

> "An amendment to an application for a patent adding new claims which do not involve a departure from the original *invention* as *described and shown in the specification* AND DRAWINGS *is within the applicant's right.*"
>
> American Steel Foundries vs. Wolff Truck Frame Co., 189 Fed., 601 (C. C. N. D., Ill., April 25, 1911; Kohlsatt, C. J.).

> "*Drawings* are a part of the specification of a patent, and for the purpose of ascertaining the sufficiency of the description of the invention, must be read with it."
>
> Brammer vs. Schroeder, C. C. A., 106 Fed., 918.

> "Where new specifications and claims are filed in which the invention is stated much more in detail, and with much fuller and more accurate language than before, this does not necessarily expand the original claims beyond the scope of the invention, *particularly where the original* DRAWINGS *and* SPECIFICATIONS SUGGEST *the claims finally made.*"
>
> Hobbs vs. Beach, 180 U. S., 383, 386, 397.

It is *obvious* here that both *the specification and drawings* as originally presented to the Patent Office *indicate the device, the function and mode of operation,* and anyone possessing common sense and mechanical skill in the art could construct and operate the machine described.

The Blatchly and Kustel patent (page 99, Appellant's brief), which called for a combination of a riffled surface and a smooth surface at the ends of the riffles, did not disclose a construction of structural elements in combination which performed, or which could be made to perform the functions of the riffles of the Wilfley patent, without a material change in the co-operation of the parts, which required the intelligent application of co-operative functions to a precedent condition, which is quite overlooked and ignored in the Blatchly and Kustel patent construction, and by anything that is disclosed or taught therein, and there is nothing disclosed or taught therein, either in construction or function, which is of the essence of the Wilfley patented construction.

The structure which performed *the primary func-*

tions, the functions performed for the first time in the history of the art, was patented to him just as he originally disclosed and claimed it.

> "A patent for a mechanical combination is not anticipated by a prior patent, which incidentally shows *a similar arrangement of parts,* where such arrangement was *not claimed nor designed to* PERFORM THE FUNCTION *for which it is designed and claimed in the second patent.*"
>
> "Where an applicant for a patent *persisted in the basic idea upon which he claimed invention, although amending his claim* from time to time after rejections by the examiner, etc.," but his claims are finally allowed, "on the broad ground that *such basic idea involved invention,* such *amendments did not limit the claim as finally allowed* to the precise construction therein described."
>
> Gray Telephone Pay Station Co. vs. Baird Mfg. Co., 174 Fed., 417 (C. C. A., Seventh Circuit, October 5, 1909).

Limitation of the Scope of the Wilfley Patent by the Language and Terminology of the Claims Construed in the Light of the Descriptions and Illustrations of the Specification and Drawings.

Defendants treat Wilfley as *a follower* and *not a leader* in the art to which his invention appertains, and insist upon a narrow and limited construction consistent

with that view, and their interpretation of the words "smooth, plain or unriffled" would imply the addition of the word *"absolutely"* as an adjective qualifying these words. On the other hand, we contend that *relativity* is inherent in the nature of the invention, and having in view the functions of the machine of the invention, the principles applied thereby, and the relation of the invention to commence and the art in its practical aspect, that the word "relatively" or the word "sufficiently" should be implied. The Defendants contend that we should be limited to the exact physical construction in detail of the specification and drawings of our patent in a limited and restricted sense, and to a limited and restricted definition of the phraseology of the claims and specification of the patent with respect to physical details of construction of the machine or machines of the patent—that the riffles should be of unequal length, the smooth surface literally and "absolutely" smooth and free from anything that *might be called* "riffles". All of which leaves entirely out of view the *functions* of the invention—*the new and effective functions and principles applied* by the *machine* of Wilfley's invention. On the other hand, we contend that the "smooth, plain or unriffled" surface of the machine of the patent must be *"smooth enough, plain enough or unriffled enough* to co-operate with these riffles of unequal length, which means unequal in length as to their terminal, *to accomplish the function required."*

In speaking of this surface (A of Fig. 3 of the patent drawing) Dr. Richards says: That it is not necessary to perform the functions of advancing terminals

of riffles terminating on a smooth surface that the smooth surface should have any definite *dimension* or *form,* only sufficiently smooth and large to accomplish the function described and that when the word "smooth" or "unriffled" is used in the art it would have the meaning "smooth enough" or "unriffled enough" for the performance of the function which it is calculated to perform. (Page 162, R.).

Mr. Glassbrook says that: As applied to the practice of ore dressing, he has never seen an absolutely smooth surface, and that so far as the function of riffling is concerned, a riffle need have no particular shape, and that on a Wilfley table what is called a smooth or unriffled surface has to be sufficiently rough to retard the downward passage of the relatively heavier particles of value to be saved; in the practical operation of the machine it is immaterial whether that surface is covered with a roughness such as represented by linoleum, or is a smoother surface made rough by scratches or slight elevations or depressions, in actual practice the conditions would be the same, it is *a relative proposition always.* (Pages 165-6, R.).

Patentee Wilfley says that in the use of a concentrating surface where corrugated rubber with grooves extending longitudinally was substituted for a linoleum surface, the corrugations merely retained the mineral and conveyed it to the end of the table, but the line of separation was along the riffle tips. (Page 179, R.).

Witness Hodges says that on this area the surface must necessarily be sufficiently rough to retain the values which are to be saved when they reach that portion

of the table, while at the same time it must be smooth enough to permit the lighter grains of valueless material to come under the dominating influence of the wash water. (Page 201, R.).

We think that we have successfully demonstrated to the Court in this case that *the Wilfley patented device, and the purposes for which it is used, do not require exactness in the construction of the parts, in order to effectively apply the principles and secure the performance of the functions which he was the first to discover, develop and construct a machine to accomplish, which is the machine of the patent in suit,* and that *there may be great variations in the elements or parts, yet the operation, as to mode and means, will remain substantially the same. All the elements being constructed* RELATIVELY *to the purposes for which they are intended to be used.*

We think the record in this case clearly discloses that the feature of "relativity" is inherent in the nature of Mr. Wilfley's invention, and in its effective application for the purposes for which it is intended, and that it is in no sense or particular bound or limited by any "poverty of expression" in the matter of description which might be attributed to the wording of either the claims or specifications of the patent.

> "The question is not one of nomenclature, but of mechanics, and relates not to the names given to the parts of the combination, but to the various functions they perform."

Carlson Motor & Truck Co. vs. Maxwell-Briscoe Motor Co., 197 Fed., 309 at 315 (C. C. A., May 6, 1912).

Among the primary rules for the construction of a contract (and the same is true of a patent, which is a contract), are these: The Court should put itself in the place of the parties at the time it is made, and *should read its terms in the light of the facts and circumstances which then surrounded them. When the intention of the parties is manifest it should control,* REGARDLESS OF INAPT EXPRESSIONS AND TECHNICAL RULES.

Nat. Hollow B. B. Co. vs. Interchangeable B. B. Co., 106 Fed., 701.

At the head end of the Wilfley patent table, where material is passing over suspended in the water, there are reasons for the presence of riffles, and the word "riffles" in the patent is used with reference to a riffle's common use, and the *functions* it performs. At the tail end, beyond the diagonal line, the *purpose* for which the surface is used, the *function* to be performed *is quite different.* The *object* or *purpose* of this surface is to *permit* the repeated washing of the material described from riffle tip to advancing riffle tip. Such a surface was described by Mr. Wilfley as "plain, smooth or unriffled," "adapted to receive the material." Can there be any doubt that the language so used by him, a man personally familiar with the miner's vernacular, and unfamiliar with the quibbling of technical patent experts and lawyers, carried the conception of a "surface *sufficiently smooth, plain* or *modified" for the purpose of*

applying the principle and performing the function which he so fully amplified in his specification, and claimed as new and his invention?

Any other construction means that Mr. Wilfley's patent is valueless—a mere change of the *degree* of smoothness, which it might be clearly obvious would not materially interfere with the effective operation of his combination, and the performance of the functions thereof could be practiced with impunity.

A literally "smooth" surface is an ideal, and not a reality; a "plain" surface is an ideal, and not a reality, and an "unriffled" surface is an ideal and not a reality, for it does not matter what the shape or size of a roughness or obstruction may be, it may be *called* a riffle.

Such a construction should not be given if it can fairly be construed otherwise.

Walker on Patents, 169 (3rd Ed.).

It is pre-eminently *a practical question,* and *not to be solved by the dictionary.*

Walker on Patents, 165 (3rd Ed.).

> *"Dictionary definitions should not be applied to words in claims if the patentee in and by his drawings and descriptions of parts and functions has clearly supplied his own dictionary."*

General Electric Co. vs. Richmond, etc. Co., C. C. A., 178 Fed., 84;

Chicago Woodenware Co. vs. Miller Ladder Co., C. C. A., 133 Fed., 541;

Adam vs. Folger, C. C. A., 120 Fed., 56;

London Mach. Co. vs. Strickler, C. C. A., 196 Fed., 751, 756.

If we are not to be confined to the ideal, where can the line be drawn?

Not at 1/1000 of an inch, not at 1/64, not at 1/32.

The rule which construes such words as "sharp," "tight" and "perfect," etc., to be "sufficiently so for the purpose," in view of the principle involved, and the functions to be performed, seems to us to be a reasonable and just rule. Such words like "smooth," "plain" and "unriffled" are in their nature *"relative"* in their import, and become especially so when used in connection with a subject-matter in which *relativity* is inherent.

As applied to the table surfaces which are here the subject of consideration, a change in the relative characteristic of a surface area, so that it ceases to be suited to *"the purpose set forth"* in the specification of the patent, would be such a change as to cause it to cease to be an infringement.

Such a rule gives us what is ours, and does not permit us to encroach upon the rights of the public.

We quote from some authorities which we would bring to the attention of the Court in this connection:

> "Taking the *words* in connection with the context and the specification (the only fair way

to consider them), they mean *sufficiently sharp for the purposes sought.*"

"No *word* can be selected to show *exactly how sharp* the teeth must be."

"The word *equi-distant* must, we think, *include any position* that is *sufficiently midway* TO ATTAIN THE PURPOSE OF THE INVENTION."

"Whether a term is used in an *exact or* only in an *approximate sense,* is to be determined by considering WHETHER EXACTNESS IS REQUIRED TO ACCOMPLISH THE RESULT TO BE ATTAINED."

Krajewski vs. Pharr, *supra.*

As to the use of the word "convex", no adjective used, held to mean *more or less* spherical in form.

Beckwith vs. Malleable Iron Range Co., C. C., 174 Fed., 1001, 1004-7.

It is not essential that "corrugations" shall possess the characteristics of regularity or symmetry, and interruptions of the corrugations by a distortion of the surface—the modification performing the functions of the patent, is a palpable evasion and infringement.

Long vs. Noye Mfg. Co., 192 Fed., 566, 569.

Counsel for Defendants seek to confine us to a *strict construction* and *exactness in reference to a use* which the testimony in this case as to what that use is plainly shows *does not require exactness.*

Again we quote:

"I think, however, the word "tight" as used in the claim, is to be construed in the light of his specification, as *meaning sufficiently tight to subserve the purposes to be accomplished.*"

Robinson vs. Sutter, 8 Fed., 830;
See discussion on page 882, *Id.*

"The specification contains the *words,* 'a *perfect* copper cylinder,' but this language must be taken in connection with the claim. * * * *It would be a narrow construction* to put upon the Adams patent to hold that it only covered a cast copper cylinder absolutely free from blow holes. Probably no such cylinder was ever made by any process. *It is a practical question.* The claim must be construed to mean a cast copper cylinder * * * that is *sufficiently perfect* to be used in the arts *for the purpose for which copper cylinders are used.*"

Adams vs. Bridgwater, 26 Fed., 327.

"What do the words 'the rotary disk-shaped Knife H, having a continuous cutting edge,' fairly import? *This language is to be read with reference to the purpose to be accomplished.*"

Sayre vs. Scott, 55 Fed., 971.

An instructive case, treating of the unimportance of the mere matter of *form* or *shape* of an element in combination, is the very recent one of Andrews Wire

and Iron Works vs. Wilson Mfg. Co., 199 Fed., 798, wherein *form* was held to give way to the *principle* involved in the invention, and where the claim described a structural element as "*formed* with V-shaped edges," it was held to cover a "U-shaped" structural element which applied the same *principle.*"

Van Valkenburgh, D. J., in Mine & Smelter Supply Co. vs. The Braeckel Concentrator Co., 197 Fed., 897, involving the patent here in suit, says:

> "This leads to a considerable discussion as to what is meant by the word '*smooth*' in the (Wilfley) patent in suit. The specification and claims show clearly that *that term was employed to distinguish one portion of the table from the riffled portion of its surface.* In claim 1 this section is described as 'a smooth, plain, or unriffled portion'; in claim 2, as 'plain or unriffled portion'; in claim 7, as 'a plain or unriffled portion' of suitable area located at the extremities of the riffles. Clearly, then, *the term is a* RELATIVE one. A riffle, as used in this art and described in the testimony, is a strip or cleat of wood or metal superimposed upon the surface of the table in such a manner as to afford a barrier or obstruction, *with the effect described.* The other portion of the table is one devoid of *such* riffles, *the degree of smoothness may be varied* as desired, *provided it may cooperate with the riffles aiding them to discharge their* FUNCTIONS."

In the case of Bresnahan vs. Trip Giant Co., 102 Fed., 902, the Court says:

> "Neither of the machines now before us is *automatic in the entire sense of the word.* * * * It follows that in this machine *the word 'automatically' is not used in such a strict sense that it may not yield* TO A JUST CONSTRUCTION of the claims * * * it may be applied * * * *to give full effect to the invention.*"

The object of the patent law is "to secure to inventors a monopoly of what they have actually invented or discovered," and it "ought not to be defeated by too strict construction" of the terms of the claims, which may be inartificially drawn.

> Austin vs. American, 121 Fed., 76;
> Topliff vs. Topliff, 145 U. S., 156;
> Sewall vs. Jones, 91 U. S., 171.

> "There is a constant tendency by those who seek to evade the claims of a patent to *dwell too much on* VERBAL *refinements,* and *not enough in the* REALITY *of* the *things* to which the *language* of the claim refers. This tendency must be avoided in order to do justice to inventors * * * mere verbal refinement must not be allowed to obscure the *real nature of the patented invention,* if it can be fairly gathered from the language of the claims."

> Robbins vs. American, 145 Fed., 923.

When the Court is convinced that a meritorious in-

vention has been made it should not permit infringers to evade the patent on narrow and technical grounds.

Cimiotti vs. American, 115 Fed., 498;
Mach. Co. vs. Murphy, 97 U. S., 120;
Cantrell vs. Walleck, 117 U. S., 689.

"If his invention is of a broad and meritorious character, such as to work a decided advance in the art, it will require something more than the use of reference letters in his claims to limit him to the *exact* form of device he has described."

Multer vs. Lodge, 77 Fed., 621.

"The claims and specifications of every patent must be read and construed in the light of a full knowledge of the state of the art when the patent was issued. A patent to the original inventor of a machine *which first performs a useful function* protects him against *all* machines that *perform the same function* by *equivalent mechanical devices,* etc."

Steratt vs. Excelsior, 61 Fed., 980.

It does not necessarily follow from the fact that the claims of a patent describe *a specific form* of construction of a machine or part, that the inventor is limited to that *form,* but it depends upon his expressed intention, and *the scope of his actual invention.*

Kings Co. R. & F. Co. vs. U. S. Cons. S. R. Co., 182 Fed., 59 (C. C. A., Cal., 1910).

When two constructions of a patent are permissible, the Court will adopt that which will give to an inventor the protection to which, under the law, he is entitled, and where the language employed in a patent is indefinite or ambiguous, it should be read in the light of the reader's knowledge of the prior art.

Malignam vs. Jasper Marsh Co., 180 Fed., 442 (C. C. Mass., 1910).

The prior art shows nothing to have been done toward exploiting and taking advantage of the diagonal arrangement of material as developed on the Rittinger table in 1867, until thirty years had elapsed, when Wilfley applied for his patent in suit.

There was nothing in the art which anticipated or suggested to the mechanic the device which Mr. Wilfley claimed as performing the *primary function,* and as we have previously stated, we think the record shows that Mr. Wilfley's patent invention is more than a mere "improvement" of what went before, since *"it covers functions never before performed" in this art,* and *is* "one of such novelty and importance as to make *a distinct step in the progress of the art,* as distinguished from a mere improvement or perfection of what has gone before." And it, therefore, is a "pioneer" invention as defined in Autopiano Co. vs. Amphion Piano Player Co., 186 Fed., 159, cited above, and *in considering the question of infringements of the claims of the patent in suit, they are entitled not only to broad and liberal construction, but to a wide range of equivalents for the device.*

INFRINGEMENT.

We now turn to the question of Defendants' alleged infringement of the claims 1, 2, and 7 of the Wilfley patent in suit.

The primary distinguishing functions of the Wilfley patent invention have been fully described and illustrated.

Defendants' structure is an infringement of the claims of the Wilfley patent because it performs the primary functions thereof in substantially the same way, and by substantially the same means.

Robinson on Patents, Secs. 893 and 894 and Notes.

Soon after the advent of the Wilfley invention and the value and utility thereof became manifest, due to its almost universal adoption in practice, experimenters and so-called inventors became active in their efforts to devise means for the piracy of the invention in order to compete with Wilfley's and Complainant's successful practice of it, resulting in the discovery that the newly conceived functions of and principles applied by the machine of the invention as discolsed in the patent could be appropriated and utilized by embodiment in machines in which modifications in degree and form of the elements of the invention were contained, in the hope that in the use thereof they might avoid infringement by securing adjudications of narrow and limited construction of the claims of the patent, limiting and restricting the patentee and his assigns to the identical form and detail of physical construction described and

illustrated in the specification and drawings of the patent, to the exclusion of all other modifications of form, degree and mechanical equivalents, in that regard entirely overlooking the primary character of the invention with respect to the functions first performed thereby.

The first to insist upon the right to embody such modified forms with respect to the elements of the Wilfley combination were Cammett and Shepard, who sought to avoid infringement while retaining the benefits of the valuable functions of the invention, by claiming to extend riffles throughout and from end to end of their tables, making their so-called riffles shallower, however, along substantially the diagonal line of the Wilfley construction, and from thence to the concentrate discharge end of the table. Judge Riner, however, held this modification to infringe in Wilfley vs. Denver Engineering Works Co., *et al., supra,* decided November 5, 1901.

For a number of years succeeding the rendition of the Riner decision, its conclusions were very generally acquiesced in, but it became more and more apparent that no machine was rendered capable of successful competition with the Wilfley invention unless it embodies a construction which made available the functions and applies the principles of that invention, whereupon others began to creep up to and finally ventured to cross the infringement line in such manner as to appropriate all there was of value—*the vitals* and the *essence* of the invention. Among others so seeking to so pirate and appropriate were The Braeckel Concentrator Co., of Jop-

lin, Missouri, and Emil Deister, and his corporation The Deister Concentrator Co., of Fort Wayne, Indiana, manufacturers and venders of the alleged infringing, so-called, Deister Concentrators involved in these cases.

The Deister Concentrators embody the same identical modifications, consisting of the shallowing of the riffles along a diagonal line, so as to retain the functions, the essence of the Wilfley invention, which were adjudicated by Judges Riner and Van Valkenburgh in the cases hereinbefore referred to, but, in addition thereto, the Deister construction here complained of dispenses with portions of the two characteristic areas of the machine of the Wilfley invention, which are found not to be essential to the performance of the functions and to constitute the essence of that invention. Reference to the opinion of Judge Van Valkenburgh will disclose that the so-called "Dunham" concentrator, by the disposition of a diagonal dam across the table, in a position corresponding with the head motion end of the Deister tables, also dispensed to a great degree with a corresponding non-essential area at the mechanism end of the table.

Reference to "Complainant's Exhibit No. 8, Photograph Wilfley Table in Operation" (page 13, Ex. R.), in connection with the testimony of witnesses from which we will now quote, discloses two normally inactive areas in the table of the Wilfley invention as manufactured (which would also be true of the table of the patent drawing, Fig. 3, page 6, Ex. R., as will clearly appear from the table of that identical form and detail of construction in normal operation as illustrated by

"Complainant's Exhibit Nos. 77 and 77-A," pages 473-474, Ex. R.).

In Complainant's Exhibit No. 8, it will be observed that the portion toward the mechanism end from the border line, BB, of the silica band is occupied by water denuded of all material except fine slimes, frequently referred to by the witnesses as "dirty water," "slime back water," etc., and that a very large portion of the area toward the concentrate discharge end of the table from the border line AA of the silica band is occupied by clean wash water.

Dr. Richards, referring to the space on Exhibit 8, between the lines BB and the mechanism end of the table states: that when the table is fed normally and the feed is free from slime or mud, that portion of the table simply carries off the excess of feed water and some of the excess of wash water, and has no other significance, and does not make that area an essential feature of the table; it is there to handle an overload in case of uneven feed, and is not essential to separation; that the purpose of the area AA is to convey the concentrates after they emerge from the ends of the riffles to the concentrates end; also to do a little final cleaning, and it also carries and directs the film of water from the wash water box. (Pages 159-60, R.).

That it is not necessary to the performance of the functions of the riffles of advancing terminals, that the smooth surface should have any definite dimension or form, only sufficiently smooth and large to accomplish the function described, removal of the upper concen-

trates corner and lower mechanism corner would not interfere with the performance of the functions of the diagonally terminating riffles (page 162, R.).

Witness Glassbrook says: The removal of the upper concentrates corner and substitution of a wash board at the extremities of the riffles, and the removal of the lower corner of the mechanism end of the Wilfley table would not interfere, or only to a very limited extent in degree, rather than function, with the efficiency and capacity and the effectiveness of the operative functions of the combination of advancing terminals with the smooth surface of the Wilfley table. (Pages 164-5, R.).

Patentee Wilfley says that in 90 per cent. of the concentration of the country, the Wilfley table might as well be cut off near the ends of the riffle tips; that all the surface necessary is only so much as is necessary to wash the material as it passes from the riffle tips, and that the area near the mechanism end may be dispensed with. (Pages 179-80, R.).

The Witness Callow testifies to the same effect. (Pages 182-3, R.).

The Witness Hodges also illustrates the non-essential character of these areas by reference to the Exhibit Model No. 7, B-D-W. (pages 190-91, R.).

We think, therefore, that it sufficiently appears from the expert testimony on the subject that the major portions of the two areas of the illustration of the Wilfley patent as well as of the commercial construction, are not essential to the co-action of the two characteristic surfaces in the effective performance of the functions of the patent, and that the fact that this is obvious is

sought to be taken advantage of in the piracy of the Wilfley invention complained of, in addition to the relative shallowing of the riffle cleats in advance of diagonal lines, so as to retain the benefits of the valuable functions of the patent in suit, while presenting a physical construction which is capable of descriptive terminology or language the import of which is evasive of the fact that the elements as actually embodied are only so modified in form, shape and degree as to retain all that is valuable to the patented invention, while *seeming to permit of limited dictionary definition evasive of the scope* of the invention, especially if the valuable functions are to be lost to view and the construction of the claims are to be measured by strict limitation to words and dictionary definitions.

The Embodiment of the Invention in Defendants' Construction and Use of Deister Ore Concentrating Tables.

Defendants' witnesses do not attempt to deny the presence of the functions of the patent in suit in the construction of these Deister tables. They seem to be content with an attempt to show that the low riffles and shallow channels at the concentrate discharge side of their tables are capable of performing some of the functions of riffles, that silica—waste material—can be seen passing over and across them, which is also true of the smooth surface A of the patent construction, as we shall show; that they catch hold and direct the course of travel of the heavier particles, which is also true of the smooth surface A of the patent construction, as we shall

show. It would be strange indeed if some silica would not be seen upon the corresponding cleaning-up surfaces, in view of the conceded fact that the finished product of the operation is *never a perfectly clean* product, and that there is *always some silica present,* which, being distinctively a clear white substance, can be seen by the naked eye in contrast with the dark—almost black—mineral values of the concentrates.

They also go to great trouble and pains to show an enrichment of the concentrates between the well marked and defined diagonal line of separation and the point of discharge of the finished product in the cleaning-up surface, which is also true with respect to the corresponding surface A of the patent construction, as we shall show. And *in addition we shall show the presence in Defendants' machines of both the valuable functions of the patent invention* which have been so amply described and illustrated in the record, and that *these functions are performed in substantially the same way by substantially the same means.*

Complainant's patent expert Witness Hodges, says:

> "Passing now to the Deister table, as shown in Complainant's Exhibit No. 5, etc. (page 11, Ex. R.), and Exhibit No. 6 model, (see also page 17, Defendants' Brief) the table as a whole is rhomboidal in shape or, when compared in a general way with the Wilfley table, *is composed of an area occupied by the essential working elements of the Wilfley table with the non-essential portions omitted or removed,*

as is well illustrated by Complainant's Exhibit No. 7, B-D-W (combination model) by removing Exhibit 7-A-W, corresponding to the portion marked A of the Wilfley patent in suit, and substituting therefor Complainant's Exhibit No. 7-A-D, at one end, and by removing the portion marked Complainant's Exhibit 7-E-W, *which is the least essential portion of the Wilfley riffles of the mechanism end of the table,* and substituting therefor Complainant's Exhibit No. 7-E-D.

In this way a table is produced which conforms more nearly to the natural diagonal banding, clearly illustrated in Complainant's Exhibit No. 8 (page 13, Ex. R.) photograph, Wilfley table in operation. On the upper edge of this Deister table there is located the feed box, and the wash water box instead of being in alignment with the pulp or feed box, is brought around in a position over the diagonal concentrates discharge area; so that it parallels, or substantially parallels, the flange or head part at the opposite or mechanism end of the table. Parallel riffle cleats extend from the flange or head part toward the concentrates discharge end, they being formed in three steps or levels, terminating along diagonal lines, the changes between which are indicated by the lines AA and BB on Complainant's Exhibit No. 5, drawing, so that *the channels at and near the concentrate end are very shallow,* and as testified

to by Mr. Glassbrook, about one thirty-second of an inch in depth on this portion of the table. Alternate riffles terminate a short distance back. By actual dimension it is two inches, and opposite the smooth, plain and unriffled area thus formed, outlets are made in the table for the concentrate, and back of these outlets the flanges are erected and spaces intervene between them, so that the water descending from the wash water box above upon the smooth surface beyond these flanges is deflected around the concentrates outlets upon the smooth, plain and unriffled areas on the table surface adjacent thereto, and for some distance back toward the mechanism end of the table. At intervals throughout the riffled surface of the table, and also at the tailings discharge end, higher riffle cleats are arranged, and these are numbered in the Exhibit No. 5, drawing, Deister table, as, 1, 10, 20 and 32, respectively. At the lower concentrates end of the table a division is made so that middlings may be taken off at a point between the concentrates outlet and the tailings side discharge of the table. The Deister table has some improved form of head motion whereby it is reciprocated in a direction lengthwise of the riffles and *the same transverse flow of water and pulps, and endwise motion and resultant settling, stratifying, conveying and banding is obviously present on this table, as I have fully described in connection with the Wil-*

fley patent and table when in operation, and I find the same main characteristics of relatively rough and smooth areas or riffled and relatively unriffled areas in this Deister table as exemplified by Exhibits 5 and 6, as in the Wilfley invention and table. There are differences from the Wilfley invention and table in the non-essentials rather than in the essentials; the essentials of the Wilfley invention and table being present in the Deister table as shown in these Exhibits 5 and 6. One of the differences is in the reduction of the plain, smooth and unriffled portion A of the Wilfley patent to a minimum by removing this corner of the table and terminating it along the diagonal line and a short distance beyond the concentrates outlets and swinging the wash water box from a position in line with the pulp box diagonally across this end of the table, but *without omitting or altering any function or essential characteristic of the Wilfley invention.* * * *

The inclined surface of the wash board of the Deister table as represented by Complainant's Exhibits Nos. 5 and 6, *is simply a portion of the so-called smooth, plain and unriffled surface of the Wilfley table reduced to a minimum with the same effect of washing back the lighter quartz and gangue, while permitting the concentrates to emerge from beneath and find their way to the outlet;* and the construction of this table is such that it would cause the formation

of the same unbroken bands, the adjustment of riffles being with reference to this object and this alone, *the riffles* preventing the bands from becoming disrupted when formed and *affording the same protection and gradual withdrawal of protection* and creating the same detention of silica up to the final line of demarcation beyond which the silica can not progress further on account of the side-wash of the water which holds and forces it back, but beneath and beyond which the concentrates travel, by reason of their greater specific gravity, which causes them to cling with greater tenacity to the table surface and causes them to progress as a result of the end motion of the table.

There is not only this relatively plain, smooth and unriffled surface practically surrounding the outlets for the concentrates, but also the slightly deflecting channels formed by the thirty-second of an inch thick terminals of the riffles extending a few inches back toward the mechanism end, which *presents a relatively smooth, plain and unriffled surface and a surface which has the function of relative smoothness;* or, in other words, *a surface which is smooth enough* to permit the unobstructed side wash of the water from the wash water box, and at the same time which must be *rough enough to facilitate and augment the clinging tendency of the heavier concentrates* to the table surface at the concentrates discharge end. This portion

of the table at the concentrates discharge end, where the terminals of the advancing riffles are located, would, in the operation of the table, be still smoother, and it would physically appear, owing to the fact that these shallow terminals fill up to their full capacity with concentrates as they pass over this portion of the table.

I find on this Deister table, No. 457, as represented by Complainant's Exhibits Nos. 5 and 6, *the same surface as disclosed in the Wilfley patent,* namely, *a riffled surface and an unriffled surface.* The riffles extend in the same direction and *they terminate along a diagonal line as in the Wilfley patent and construction, in a plain, smooth and unriffled surface,* or, in other words, a surface which is *smooth enough* to permit the transverse flow of wash water film there across, while, at the same time, it is *rough enough,* as in the Wilfley patent and construction, to retain, hold and support the concentrates while the water passes on over them and creates the final cleaning and separation. There is in effect the same end motion lengthwise of the riffle cleats, and the same feeds above the uppermost riffles and the location of the wash water is slightly shifted, namely, to a point nearer the diagonal terminals of the riffles. *So that, in this table, there is present the effective operative part of the Wilfley table with an elimination, so to speak, of portions which are not absolutely essential to the operation of concentra-*

tion under fairly satisfactory conditions. *The difference* between the Deister table and the Wilfley invention and construction, in a word, *is a difference in dimensions and proportions* rather than a difference in kind and operation.

Applying the test and comparison of these three claims with the construction of the Deister table as understood and as exemplified in Complainant's Exhibits Nos. 5 and 6, and taking the claims in their order:

First, in Claim 1, a transversely inclined concentrating table having a movement whose tendency is to carry the material longitudinally forward towards the tail or foot of the table. This description accords precisely with the construction here presented.

The second qualification of the claim, namely, the table provided with a number of riffles extending longitudinally a portion of the distance from its head toward its foot, said riffles varying in length for the purpose specified. *The purpose specified* is not only stated in the portion of the specification which I have hitherto quoted, but is summarized in the following language, commencing with line 43, page 2, of the specification, to-wit:

'A portion of the gangue—that is to say, the latter part thereof—passes over the riffles in succession from the shortest or uppermost to the longest or lowermost riffle. The mineral and heavier gangue are caught by the rif-

fles and finally separated on the smooth portion A of the table. This combination in the concentrating tables of riffles of varying length for catching the mineral and a smooth, plain or unriffled portion at the extremities of the riffles where the final separation is effected, through the action of the water, is believed to be entirely new in an apparatus of this class.'

'A riffle is the best means of catching mineral, while a smooth, plain or unriffled surface is the best for effecting the separation of the mineral from the gangue caught with the mineral by the riffles; the separation being effected by the action of the water.'

Referring now to the construction shown in Exhibits 4, 5 and 6, which represent the Deister table, I find the riffles called for by the claim extending longitudinally a portion of the distance from its head toward its foot, said riffles varying in length *for the purpose specified* —that is to say, *varying in length to perform the functions required of the terminals of the riffles, which function is the same and performed in the same way as in the Wilfley patent and construction.* The claim next recites a smooth, plain or unriffled portion extending from the extremities of the riffles toward the tail of the table, whereby the material as it leaves the riffles, is subjected to the action of the water on the smooth portion of the table and the final separation of the mineral from the gangue is ef-

fected. The construction on Defendants' table is apparently with reference to this same condition and function—that is to say, the surface at the concentrates end and at the terminals of the riffles must be sufficiently smooth to serve as a clinging surface and also to convey the wash water across the terminals of the riffles and over the bands of concentrates, while at the same time, the surface is not perfectly smooth, but, on the contrary, it is rough enough to hold the concentrates in their progressive travel, due to the motion of the table, over this portion of the table, just as set forth in the Wilfley patent and as practiced in the Wilfley invention. In other words, this effective working part of the Deister table answers the terms of this claim when considered in the light of the description as referred to in the language *for the purpose specified,* with all the fidelity which any construction, not an exact copy of the Wilfley patent and concentrator, could reasonably do.

Taking the second claim, it first recites 'A transversely inclined concentrating table having a number of longitudinal riffles extending a portion of the table's length from the head toward the foot. Second, said riffles being of unequal length, the uppermost being the shortest, while the other riffles increase in length from the upper edge to the lower edge of the table, the table having a plain or unriffled por-

tion lying at the extremities of the riffles and adapted to receive the material caught by the riffles.

When consideration is given for the fact, as has been testified to by different witnesses, that *the lower mechanism corner of the Wilfley table is not absolutely essential to the effective work of ore concentration on that table,* then it would seem a perfectly fair conclusion to reach that the variation in length must refer to an active, distinctly operative and essential portion of the riffles, which portion is the terminal ends of the riffles, as those are the ends where the effective final separation is accomplished and where the saving is effected of the doubtful grains, the saving or loss of which goes largely to make up the difference between gains and losses and actual saving in ore concentration. In other words, it seems a perfectly reasonable interpretation to place upon the language of this claim, in view of the specifications and the actual operation of the Wilfley table, that the reference made by the language is to the actively operative part of the riffles which continuously advance and terminate beyond those above and along a diagonal line; thus to all intents and purposes making the uppermost the shortest and the lowermost the longest, and the intermediate ones of correspondingly increasing length; and the terms of this claim, therefore, are to be found in the Deister construction.

Comparing the seventh claim with the Deister construction element by element, as previously stated, we find the transversely inclined concentrating table having a series of riffles extending longitudinally from the head toward the tail of the table, said riffles of unequal length, the uppermost being the shortest and the riffles increasing in length from the upper to the lower edge of the table, and the table provided with a plain or unriffled portion of suitable area, namely, a portion of sufficient smoothness to perform the function of a so-called plain and unriffled portion created at the extremities of the riffles. Also, there is means present for feeding the material to the upper portion of the table's edge, namely, the pulp box, and means for discharging the water on the upper edge of the table, namely, the wash water box, and suitable means for imparting to the table, namely, the head motion, a longitudinally reciprocating movement of a character adapted to move the material from the head toward the tail of the table, etc."

"Therefore, I repeat, and for the reasons which I have stated, the elements set forth in the claims 1, 2 and 7 of the patent in suit are present in the Deister table as is illustrated by model, Exhibit No. 6, and the drawing, Exhibit No. 5." (Pages 190-201, R.).

He describes "as actually physically smooth, or ap-

proximately so * * * all of that area between the lines marked DD and EE on Exhibit No. 5, drawing, Deister table," and that "on the entire surface under the water box defined by the lines CC and EE, the surface to all intents and purposes is smooth," and that "what Deister has done has been to reduce this area (A of the patent) to its minimum proportions", and that "Deister *quickly disposes of the concentrates after nothing further in the way of separation can be done with them,* and *Wilfley might have done the same*, the idea being to separate the values from the valueless, and after that has been accomplished *the manner of disposing of the separated product was entirely a secondary consideration,"* and that "we could even eliminate this more or less sharply sloping wash board except as the water conveyor, but we *still have a smooth surface or smooth area at the very end of the table; that where these channels are reduced to a depth of 1/32 of an inch, at this portion of the table, it is smooth enough to permit the transverse flow of wash water and create the final paring off and separation, and yet rough enough to permit the particles of mineral to cling and cleave with the required tenacity to maintain their position until they leave the table."*

Further: that the patentee in defining the smooth portion A of the patent "*was influenced in the choice of his words by the general characteristic of the surface of the table,* and that *he applied the term 'smooth, plain and unriffled'* to express a distinction between the surface of the table which was intended *to perform a certain work as contradistinguished from another por-*

tion of the surface intended *to do a different part of the work;"* and that *"what Mr. Deister did was to adopt the essentials, the vitals, of the Wilfley invention, and do away with the non-essentials, * * * he omitted no function of the Wilfley table, nor did he alter the functions,* he steadfastly adhered *to those features—the advancing terminals and an area at those terminals* SMOOTH ENOUGH *to accomplish what Wilfley's so-called* 'smooth, plain and unriffled' surface does." (Pages 202-4, R.).

Dr. Richards agrees with the Witness Hodges in all particulars, describing the operation of the Deister table in detail (pages 160-63, R.), and (on pages 226-231, R.) illustrates the same by reference to the photograph Exhibits 104 to 113 (pages 571-604, Ex. R.), and referring to the functions described in the specification of the Wilfley patent in suit, commencing on the next to the last line on page 1 and concluding on line 56 page 2 of the patent (pages 7 and 8, Ex. R.), and to the photograph Exhibit No. 77 (page 473, Ex. R.), illustrating the patent construction in operation, he says that exhibit illustrates the function (of the co-action of the riffle tips and smooth surface by repeated washing, etc.), described in that part of the specification that *"it shows the gangue with streaks of mineral contained therein passing from advancing riffle tip to advancing riffle tip below,* progressively down the ends of the diagonal riffles"; and that "these Exhibits 105 and 106 (of the Deister table in operation) *both disclose that action* * * * on the line AA or the first diagonal line of step-offs" and that "during the time of the conducting of the tests which are illustrated in these photographs *this action was* VERY

apparent to the eye along the line indicated in these photographs." (Pages 230-31, R.).

NOTE: Counsel request the Court to examine the original photograph Exhibits Nos. 77, 105 and 106, which show more distinctly the passage or dropping down of material from tip to tip of the riffles than do the printed record reproductions thereof.

Witness Callow, after describing the changes made in the Wilfley patent constructions, says: "The Deister construction embodies and includes the effective operative surface of the Wilfley concentrator construction practically in its entirety." (Pages 184-5, R.).

And the Witness Scobey in comparing the photograph Exhibits 77, Wilfley table and 105 and 106 Deister No. 2 tables in operation, finds the same function present along the diagonal line of step-offs AA. (Pages 211-12, R.).

Witness Bunce makes the same comparisons, and observations (page 232, R.).

We will now briefly refer to testimony and exhibits introduced into the record by Defendants, which we anticipate will be urged by counsel in avoidance of the infringements complained of. Counsel seem to have assumed that the difference in area of the surfaces of the respective constructions, the difference in weight; the alleged difference in cost of upkeep, and the alleged greater efficiency of the Deister tables (according to tests conducted by adverse witnesses) are material for the purpose of excusing and warranting the piracy and infringements complained of. We shall show by the authorities which we shall cite, that even conceding *all* that

is or may be claimed in these respects, it is quite immaterial to the issues here.

The principal part of the testimony taken on behalf of Defendants is devoted to showing the undoubted fact that silica passes out from the higher portions of the riffles of the Deister table onto the surface covered by the extremely shallow riffles toward the concentrate discharge end from the line B-B of the exhibits, this cumulation of testimony was introduced on the assumption that Mr. Hodges had been mistaken when he stated, as matter of opinion, before he had ever seen a Deister table in operation, that the separation was *commercially* completed at or approximately at the line B-B, which is true in the sense that the line of separation is maintained there in the practical operation of the table. *All of Defendants' witnesses so declare.* But all agree that a very considerable percentage of silica is carried beyond that line, in their practice, and even into the finished concentrates as they are deposited in the concentrates launders. In such case it would be most likely that particles of white silica would be seen with the naked eye passing over the top of the heavier minerals which occupy the shallow channels on that surface, but the same is true of the corresponding linoleum surface of the Wilfley patent construction, and the testimony is uniform and consistent on both sides that there is a continuous washing and cleaning-up on and across that surface, that is to say, the fine particles of silica that escape from the higher riffle ends onto that surface in both the Wilfley and the Deister construction, by reason of their lighter gravities, naturally find their place at the top of

the heavier mineral particles where, being subjected to the cross-flow of the wash water they are carried down the transverse slope or incline of the table, and that means exactly that they are carried back to the higher riffle tips, for *these* are *always below*—adown the slope of the incline—*to catch these particles* and to rewash by means of the co-acting function of the two surfaces. *Whatever of this silica is not eliminated* IN THIS WAY BY THE OPERATION OF THE FUNCTIONS OF THE WILFLEY PATENT, *is not eliminated at all,* but passes with the concentrates into the receptacle provided therefor, and these functions are operative at all times along at least three diagonal lines of detention provided in the Deister construction.

The fact is that just the same thing occurs in this regard on the corresponding surfaces of both tables.

Much pains has been taken by counsel for Defendants to demonstrate the fact which, is no doubt a fact, that there is an enrichment of the material as it travels from the ends of the higher riffles toward the concentrates discharge edge of the Deister table. This *could not be otherwise* either upon this surface and in these very shallow channels or upon the corresponding linoleum surface of the Wilfley table. *It* IS *the case with respent to* BOTH. *There is* NO DIFFERENCE *in that regard.* And why? Simply because on both these tables the impelling force of the movement of the tables causes the heavier particles of metallics to travel more rapidly in that direction, than do the lighter particles of waste, and the values therefore naturally take this advanced position on the concentrating surfaces, while the waste material is passing in another direction—down the in-

cline of the table. In other words, with respect to the heavier particles of value which are in more direct contact with the surface of the table, the endwise movement and friction dominate, while with respect to the lighter particles of silica and other waste products which are more or less in suspense in the cross-flowing wash water, the latter dominates, holding the same back toward the advancing riffle tips and in a position lower down on the incline.

This corresponding enrichment on the linoleum surface of the Wilfley table is clearly demonstrated by the photograph Exhibit and accompanying diagrams Nos. 99, 99-A; 100, 100-A; 101, 101-A (pages 557-66, Ex. R.); the diagram of the sampling of the material in the tests illustrated by these photograph exhibits and diagrams, "Complainant's Exhibit No. 102, Scobey Chart" (page 568, Ex. R.), shows the points at which the samples were taken, and that (this being a lead separation) there is a marked enrichment in lead as we progress from the riffle tips toward the concentrate discharge end of the table on the four lines, projected in alignment with the riffle cleats.

"Complainant's Exhibit No. 103, Assays of Samples, etc.," gives the same data in tabulated form (see testimony of Witness Scobey with regard to these exhibits, page 211, R.).

Whether an invention be a pioneer (in a broad sense), or, being of small importance, is ranked at the foot of the line, its commercial aspect should receive due consideration, and *it should be judged on its own merits;*

that is to say, *according to the advance it has made in novelty and utility beyond the former art.*

The statutory requirement that an applicant for a patent shall explain the best mode in which he has contemplated applying the *principle* of his invention (U. S. Rev. St., Sec. 4888) *does not preclude him from claiming any other mode which embodies his principle.*

Vrooman vs. Penhollow, 179 Fed., 296 (C. C. A., Sixth Circuit, May 4, 1910).

If the patentee's *ideas* are found in the construction and arrangement of the subsequent device, *no matter what may be its form, shape or appearance,* the parties making or using it are deemed appropriators of the patented invention.

Norton vs. Jensen, 49 Fed., 859;
Rogers vs. Merganthaler, 64 Fed., 799.

We believe that the best brief which we could submit to the Court on the substantive law of this case is contained in the opinion of Sanborn, J., in the case of Nat. Hollow B. B. Co. vs. Interchangeable B. B. Co., 106 Fed., 712. We urge the Court to read and consider that opinion carefully. The Wilfley patent, in view of the stride in the art made by his invention, is broader and is entitled to a broader and more liberal construction than the Hein patent there in suit.

We believe that we are entitled to have Defendants' constructions held to be mere "colorable evasions" of the *described means* of the Wilfley patent.

Defendants' constructions constitute infringements,

if the means come within the *description* of the Wilfley patent *properly construed, in view of the subject-matter of the invention,* or, if not within the *terms* of the patent properly construed, if they are *equivalent means, and,* wherein there is difference between Wilfley's patent construction and that of Defendants, the rule as to equivalents obtains.

Gray, etc., Co. vs. Baird Mfg. Co., 174 Fed., 417.

The Court will look through the disguises, however, ingenious, to see whether the inventive idea of the original patentee has been appropriated, and whether the Defendants' device contains the material features of the patent in suit, and *will declare infringement even when those features have been supplemented* and *modified* to such an extent that the Defendants may be entitled to a patent for the improvement.

Crown vs. Aluminum, 108 Fed., 845;
Clough vs. Mfg. Co., 106 U. S., 166, 178;
Consolidated Valve Co. vs. Crosby Valve Co., 113 U. S., 157;
Wilfley vs. Denver Engineering Works Co., *et al., supra.*

"The addition of something to what is shown by a patent does not avoid infringement *if the substance* of the invention is *taken* and the *principle* or *mode of operation retained.*"

Long vs. Noye Mfg. Co., 192 Fed., 566, 569.

All of the elements of the patent combination are employed by Defendants with substantial identity in their use, and *departure appears from the* LETTER *of the claims only, without substantial difference in the principle of operation.* The policy and rules of the patent law require that the patentee be *protected against such evasions of the* WORDING *of a claim* in *form* of non-essential details, *when the* SUBSTANCE *of the invention* is thus used, *and is unmistakably shown* in the specification and claims.

Columbia vs. Kokomo, 143 Fed., 116;
Hoyt vs. Horne, 145 U. S., 302;
International Mfg. Co. vs. Brammer Mfg. Co., 138 Fed., 396.

> "It is generally true, when a patentee describes a machine, and then claims it as described, that *he is understood to intend to claim,* and *does by law actually cover,* not only *the precise forms* he has *described,* but *all other forms which embody his invention,* it being a familiar rule, that, to *copy the principle* or *mode of operation described,* is an infringement, *although the copy should be totally unlike* the *original* in *form* or *proportions.*"

Winans vs. Denmead, 15 How., 330.

To constitute an infringement, the thing used by the Defendant must be such as to substantially embody the patentee's *mode of operation,* and thereby to attain *the same kind* of result as was reached by his invention. It

is not necessary that the Defendant should employ the plaintiff's invention *to as good an advantage* as *he employed it,* OR *that the result should be the same in* DEGREE; but it *must be of the same kind.*

Sewall vs. Jones, 91 U. S., 171;
Winans vs. Denmead, 15 How., 330.

Superiority or inferiority of utility in a Defendant's machine does not necessarily import non-infringement, *even where it can be traced to slight differences in mode of operation.*

Walker on Patents, Sec. 376 (3rd Ed.).

And when it is made to appear that Defendants' construction is a mere "colorable evasion" of that of Complainant, as disclosed by the drawings and specifications and embodied in the claims of and protected by his said letters patent, which, under the pretense of having embodied in their construction *some function in addition to those performed* by Complainant's construction, but *which nevertheless will be found, upon a critical examination, to have appropriated all that is of value* in Complainant's device, it will not be said, in aid of a narrow construction of Complainant's claims, that he has abandoned anything by reason of *any* proceeding in the course of the pendency of his application for letters patent for his invention.

Metallic Extraction Co. vs. Brown, 104 Fed., 345.

Changes in the *form of embodiment* DO NOT affect the identity of the invention.

Theberath vs. Rubber, etc. Co., 15 Fed. Rep., 246;
Smith vs. Nichols, 21 Wall., 112.

Brown, J., in Hobbs vs. Beach, 180 U. S., 383, says:

"The fact that the Horton device contains no mechanism for turning the strip into the inside of the corner merely indicates that it does not perform all the functions of the Beach patent. BUT IT IS NO LESS AN INFRINGEMENT *if* IT PERFORMS ITS PRIMARY FUNCTION in practically the same way. We are not concerned with the subordinate differences in the mechanism, *least of all with the different* NAMES *given by Horton to parts of his* machine similar to the corresponding parts in the Beach patent."

A patent claim impliedly covers all means, though neither expressed therein nor described in the patent specification, that *perform essentially the function of the specification means embraced by that claim in essentially the manner in which such claimed means performed it,* and *any means not described* in a patent claim, that is *equivalent to a described means* included thereby, is within the scope of the latter *as fully as though it had been described in the specification* and *expressed* in the claim.

Hall's Infringement Outline, pages 12-13, and cases cited in appendix.

Conceding that Mr. Wilfley in developing his invention used things which had been used before, yet it is

true that by the use of them *he added just the element, in the* ADJUSTMENT *of the combination,* which was *necessary* to make the whole a practical, valuable and economical apparatus. Just what all prior devices of this type lack, his device contains.

See:

Consolidated Valve Co. vs. Crosby Valve Co., 113 U. S., 157.

See, also:

In re Barbed Wire Patent, 143 U. S., 275;
Hobbs vs. Beach, 180 U. S., 383;
Nat. Hollow Brake B. Co. vs. Interchangeable B. B. Co., *supra.*
Krajewski vs. Pharr, *supra.*

In Consolidated Valve Co. vs. Crosby Valve Co., above cited, the Court remarks (page 179) that "When the ideas necessary to success are made known, and a structure embodying those ideas is given to the world, it is *easy for the skilled mechanic to vary the form by mechanism which is equivalent,* and therefore an infringement."

"Even if Complainant should be deemed not to be a *pioneer inventor* in the broad signification of the term, but *an improver only,* he is entitled to a reasonable range of equivalents, *measured by the advance he has made,* over older machines, and should not be limited to the specific *form* claimed and described in his patent."

McSherry Mfg. Co. vs. Dowagiac Mfg. Co., 101 Fed., 716.

Metallic Extraction Co. vs. Brown, 104 Fed., 345.

See, also:

Nat. Hollow B. B. Co. vs. Interchangeable B. B. Co., *supra.*

The question whether one thing is a mechanical equivalent for another is a question *of fact* depending on the testimony of experts, on an inspection of the machines, and *it is an inference* to be drawn from all the circumstances of the case, by considering whether the device used by the defendants, *is used for the same purposes,* performs the same functions, or is *applicable to the same object,* as the contrivance used by the patentee.

Foss vs. Herbert, 1 Bissell, 121; 2 Fisher, 31; 9 Fed. Cases, No. 4957, page 503.

"Every structure and combination which adopts the principle, the conditions which distinguish this combination from those which preceded it, * * * is a mechanical equivalent of the combination of this patent, and an infringement of the franchise its grants."

Nat. Hollow B. B. Co. vs. Interchangeable B. B. Co., *supra.*

Equivalent means need not, in order to be held such, be confined to mere matter of *form* in the construction, which varies from or is other than the means claimed in

the patent alleged to be infringed, but may also be held to be an equivalent of such means, *although it may operate in a detail way, other* and *better* than that which the patent describes as being the operation of the means claimed therein.

Hoyt vs. Horne, 145 U. S., 302, and cases there cited.

The test of *equivalency* with respect to a substituted element in a patented combination is *whether it operates* in *substantially the same way to produce substantially the same result in combination.*

Palmer vs. Jordan Mach. Co., 186 Fed., 496 (U. S. C. C., N. Y., 1911).

When an element in a patented combination *is improved,* and yet performs *the same functions* in *substantially the same way,* the use of the combination is an infringement.

Potter vs. Letward, 7 Fed., 215.

And even the *addition of a new function* by Defendant which would not alter the patented combination of Complainant, would not entitle Defendant to appropriate the invention of Complainant's patented invention.

Consolidated Fastener Co. vs. Hays, 100 Fed., 984;
Hoyt vs. Horne, *supra;*
Metallic Extraction Co. vs. Brown, *supra.*

Such alleged *added function* or *improvement* if con-

ceded *would not excuse the appropriation of all that is valuable in the Wilfley structure.*

Hoyt vs. Horne, *supra* (see page 309).

And, if it may be said and is a fact that the low riffles at the tail end of Defendants' No. 2 tables *perform the function claimed, of separating the various elements in the concentrates,* and that there is practical merit and advantage in their so doing, yet *the addition of such new function, which does not dispense with the action of Complainant's patented combinations,* will not entitle Defendant to appropriate his invention.

Consolidated Fastener Co. vs. Hays, *Supra.*

In a very recent decision of the U. S. Circuit Court of Appeals of the Third Circuit, rendered at the October Term, 1912, in what is known as the "Slime Filter Case" wherein the Moore process patent No. 764,486, was under consideration, the same being for a *process* that met a problem "to make *commercially* possible the recovery of a *minute amount of valuable metal from a large quantity of mud,*" the Court, in reversing the court below, said: "Viewed from a patent standpoint, the significance of a machine lies *not in its* FORM *but in* THE PRINCIPLE *on which it works,*" and that "The mere fact of the *output being carried off* as a dry product in Moore's case, to a dump heap, and in respondent's in a fluid form to a slime pit, does not go to the *substance* of the process. In the *essentials* that involve the invention, *the two are alike.*"

If the identity of means employed by Defendant in its concentrator tables should not be deemed to be virtually the patent-described means covered by the Complainant's letters patent in suit, and for *that* reason clearly infringements of the same, we crave the liberality of construction of Complainant's patented claims which we believe their primary character warrants, that the structural elements in combination embodied in Defendants' constructions be held to be EQUIVALENT to the construction shown by our patent.

Dr. Richards, who since some time in the 70's has devoted his life to the study and teaching of the art of ore dressing, and who has published the most exhaustive treatise on the subject, has pointed out wherein the combinations of means embodied in the machines of the Defendant co-act in substantially the same way in the application of the principles of the Wilfley patented machine, pointing out to the Court the identity of functions. He does not rest his testimony on matter of opinion, but upon actual observation of the machines in mill practice.

In the last analysis, Defendants' counsel rely upon the fact that a residuum of fine particles of gangue may be seen by the naked eye, being carried transversely down the table over the surface occupied by these slight structural elements—the extremely shallow cleats next the concentrate discharge of the Deister construction.

This is no doubt true. Mr. Browne has seen it. So

has every one seen it who has observed the table in operation. It is equally true with regard to the corresponding area of the tables of the Wilfley invention. It is true of all concentrating devices of this type, over the entire superficial area which may have material upon the surface which is susceptible of suspension in a water current. The testimony is uniform to the effect that on none of these devices is there an absolutely complete elimination of such particles from the finished product of the operation. The Defendants' machines are not different in this regard from the Complainant's machine.

It is a matter of slight importance after the main bulk of gangue is removed that these few fugitive particles of waste sand pass down across the table, and either pass off the tailing discharge side, or, what is just as likely, are caught in a channel lower down and carried into the concentrate. It is of great importance, however, that the heavier particles, comprising the values, should not, by being so carried down, encounter the danger of being carried off the tailings side; and it is frequently the case, in practice, that by proper adjustments of the machines an increased percentage of gangue is permitted to pass into the concentrates, rather than endanger the departure of particles of value, empounded by gangue matter, to pass into the tailings race. This is permissible up to a point where a penalty would be imposed in treatment charge in the process of smelting, to which the concentrates have yet to be subjected. It is the practice of many of the smelters to encourage the retention of a certain percentage of silica gangue, but to penalize by increased smelter charge for an excess of silica above a

percentage which may be desirable for the combination most favorable to fluxing in the smelting process.

It is significant that counsel for appellants, in their brief, concedes that it is necessary to have *very low* riffles on the area of the Deister table, lying between the diagonal line of the step-offs to the concentrates discharge edge, "low enough to let the fine sand go over, and at the same time, high enough to keep the concentrates back," and in that connection is made the significant admission of the "relativity" which we contend is inherent in the nature of the subject-matter of the Wilfley invention (pages 23-4, Appellants' brief).

A patent to Emil Deister, the designer of the Deister table, which is an exhibit in the cases (No. 895,169, August 4, 1908, pages 249-52, Ex. R.), the specification and drawings of which describe the "off-sets" in a series of riffle cleats, such as is used in the tables in Defendants' mills, describes the purpose for which the same are intended, as follows:

> "The off-sets of the riffles afford relief for the overlying gangue so that it tends to run downwardly toward the tailings discharge side of the table, while the underlying mineral portion of the pulp thus relieved of the overlying gangue, is *carried by the shallow extensions of the riffles* outward to the mineral launder, and *while being* DIRECTED *by said extensions,* is treated to the action of dressing water and thereby further relieved of gangue." (Lines 72 to 82, page 2, of specification.)

That is to say: After the operation of the advancing step-offs or "off-sets" has been utilized by the application of the distinctive principles and functions of the Wilfley invention, "the mineral portion of the pulp thus relieved of the overlying gangue is carried * * * outward to the mineral launder, and while being directed * * * is treated to the action of dressing water and thereby further relieved of gangue," which is just exactly what the corresponding linoleum surface of the Wilfley patent construction does, nothing more or different, except that the shallow channels of the Deister construction, to the extent of their combined holding capacity, give a definite *direction* to the progress of the finished product of the operation of the elements of the invention of Wilfley.

Counsel for Appellants have inserted in their brief (page 112) the drawings of the Cammett and Shepard patent No. 632,892, September 12, 1899. This patent was not introduced in the record in these cases.

In Wilfley vs. Denver Engineering Works Co., 111 Fed., 760, the construction alleged to infringe was in substantial conformity with the specification and drawings of said Cammett and Shepard patent in which the patentees specifically define the purpose of shoaling the riffles extending over the area corresponding with the "smooth, plain or unriffled" area of the Wilfley patent, as follows:

> *"We have discovered that the advantages of an unriffled portion toward the foot of the table may be retained and the disadvantages be gotten*

rid of BY CONTINUING THE RIFFLES AT A DIMINISHED HEIGHT *across such area to the foot of the table.* The reduced portion of such riffles *should be so low as not to interfere with the transverse flow of the wash water toward the tailings side of the table,* yet their presence is sufficient to exert a very decided guiding tendency to the heavier particles which constitute the values, etc.'' (Lines 30 to 65, page 1 of Specification.)

Cammett and Shepard were the first, so far as the art discloses, to step-off or shallow a series of riffles for the purposes specified, and hereinbefore quoted from the specification of their patent.

Judge Riner in Wilfley vs. Denver Engineering Works Co., *supra,* after defining ''the feature of the Wilfley invention covered by his patent,'' says, ''Do the shallow grooves in the Defendants' table (Cammett and Shepard), extending from the ends of the raised ribs or riffles to the end of the table, and through that portion of the table designated in the Wilfley patent as 'plain, smooth, or unriffled,' perform any other or different function? After a most careful study of this record, I have reached the conclusion that they do not.'' * * *

''The improvement in the Cammett over the Wilfley, if it is an improvement, *consists in directing and delivering,* by means of the grooves in that portion of the table designated as plain, smooth, or unriffled in the Wilfley patent, the concentrates into the receptacle provided therefor. It may be that the Cammett tables are an improvement upon the invention covered by the Wil-

fley patent in this respect, *but it still has all the essential elements of the best form of Wilfley's invention. It performs the same function in substantially the same way,* and, therefore, must be held to infringe."

Defendants insist that it is not proven that the (Wilfley) "machine patented was the first to perform a new and definite function in the practice of ore dressing, *so as to produce both increased efficiency and capacity.*"

Defendants insist not only that the inventor, Wilfley, was not a pioneer in the art, but also that his invention did not signalize a notable advance in the art. That such advance in the art is not proven.

It being admitted that the invention and machine of the Wilfley patent embodied a *new principle* (not a new combination of means for applying an old and well-known principle), Defendants would have the Court disregard the uncontroverted testimony of these witnesses of long experience in the operation of concentrating devices of all kinds, who *know* and positively *state* in the record that the invention did result in both increased efficiency and capacity, and that due to that fact the machines of the invention came into almost universal use throughout the world. The testimony of these witnesses in this regard was not merely theoretical. It is true that they did not testify as to the details of operation and the analyses of any of the undoubted thousands of comparative tests which were made of this invention *in comparison with the older machines and apparatus* in use *at the time* of and *prior to* the advent of the machine of the Wilfley invention, and which the latter supplanted, but they presumably had the knowledge acquired by the

experiences of such tests, and the Defendants' counsel did not undertake to test the basis of the knowledge of which they testified by either cross-examination or by the introduction of proofs based upon a comparison with anything which preceded or antedated the Wilfley invention.

The Defendants confined their tests to the comparison of an unchaperoned Wilfley machine with the *later* machine of the Defendants' construction in which they sought to embody all that the patent of the Wilfley invention taught, together with some alleged "improvements"—a machine constructed in the light of some ten years or more of experimentation with the new type of apparatus evolved and patented by Wilfley. They put the machine of the Wilfley patent "up against" itself "and then some," if indeed there be anything *added* in the Deister construction which makes for either greater efficiency or capacity, and ask the Court to *infer* from their tabulation of results introduced in the record, over proper objection of counsel, that the machine of the Wilfley invention and patent did not develop increased efficiency and capacity over what preceded it in the art and practice of ore dressing.

Testimony and exhibits of this character serve no purpose, as tending either to disprove the advance in the art by increase of efficiency and capacity attained by Wilfley's admitted embodiment of a new principle, or by way of avoidance of infringement.

Counsel for Defendants say that it is not *proven* that Wilfley, by the machine of his invention, was the

first to perform a new and definite function in the practice of ore dressing.

In that regard, we have not only the testimony of Dr. Richards, who has kept in touch with the art and literature as well as the practice of ore dressing, that the machine of the Wilfley invention *was the first,* and that at once upon the advent thereof its value was recognized not only by general adoption but also by the imitation of inventors who made some fifty-odd applications for letters patent on various claimed improved constructions embodying the disclosures of the invention, but we have the fact of the disclosure of the invention itself by Wilfley in the middle eighteen-nineties, and the prior art presented in the record in these cases, to which we are limited for the determination of the issues herein, and which show conclusively that at least so far as anything in the art is the subject of consideration in these cases, Wilfley *was* the *first* to patent a machine to embody the admitted new principle in the art.

Counsel for Defendants, quoting from the court's memorandum decision, seem to assume that the trial court based its conclusions upon the fact that the shallow riffles at the concentrate end of the alleged infringing tables deflected, or departed from the alignment of the higher diagonally reduced riffles. We do not understand from the language quoted, or from any part of said memorandum, that the Court rests its decision "mainly," or in any respect, upon "the deflection of the riffle terminals in the Deister table," and believe we are correct in assuming that the Court referred to "the deflected ends of the riffles" solely as *descriptive* of the

riffles which are located in a certain *position* with relation to the diagonally arranged riffles (as on the Wilfley table). Functionally, with respect to the co-action of the diagonally terminating higher riffles and the relative smoothness of the area covered by the very thin deflected riffles, there could be no material difference whether they were extended in alignment with the higher riffles, or were deflected either in an upward or downward direction.

Defendants ask a reversal with respect to the trial court's construction of the claims of the Wilfley patent in suit, and base their main argument upon the decision in Seabury vs. Johnson, 76 Fed., 456, the sulphur candle case. We make no controversy over the doctrine of that case, as applied to the facts, which widely differ from those of the case at bar.

Wilfley did not *limit* any of the elements in the combination of his invention by the *language* of his claims to any specific *shape or form* nor to any specific character of material to be used in the construction of *any* of the parts. He did not prescribe either wood, linoleum, metal or plate glass, for *any* of the parts, nor does his specification go so far as to *recommend* the use of any particular material as having advantages over any other material, or being "preferable." He might have limited himself by language embodied in the claims to an "absolutely" smooth surface, or to a surface of plate glass, or he might have specified burlap, for such a surface, or limited himself to a surface having no obstructions, scratches or irregularities thereon in excess of one one-hundredth of an inch above or below the general

plane, but he did none of those things. His claims do not cover the elements of his combination *per se,* either as to shape, form or material. His invention lies in the co-action of correlated elements in combination in the application of principles in the performance of certain effective functions, the application of which the record discloses was original with him.

The Defendants seek to have the claims of the Wilfley patent in suit construed as being much narrower than the invention presented, in order that they may, with impunity, appropriate the very essence of the invention, by limiting and confining Complainant to the *"configuration"* and details as to *form* of the machine and structural elements of the Wilfley patented invention as the same is shown in the drawings of the patent, because the inventor did not anticipate, describe and secure the allowance of claims specifically describing and covering every imaginable structural *"configuration"* and form by means of which the principles and functions of his machine might be applied in mill-practice. The patent law does not contemplate such a thing.

Among the cases cited is that of Railway Co. vs. Sayles, 97 U. S., 554,563, upon which is built the argument of counsel in support of their contention for such narrow construction.

This case lays down the proposition, as applied to *improvements* in an old art, that "The parties are entitled to the specific *improvement* they respectively invented, *provided* the later *does not* INCLUDE *the earlier."*

Just what we insist upon in the case at bar is, that if there be novelty and patentable invention in the De-

fendant's machines, the machines, nevertheless, *include* the invention of Wilfley, and that the Deister No. 2 includes the Wilfley invention.

The case referred to is founded on a patent for a confessedly narrow invention, "an improvement upon the car brake *now in general use*" (page 562).

The patent there in suit was for an improvement which only substituted a *lever* to perform almost precisely the same office performed by a *drum* in prior use, operating, by means of connecting rods, upon brakes, in nearly the same manner. The functions of a *lever* and a *drum* are practically identical, indeed a drum has been aptly called "a *continuous* lever."

This was a case wherein upon rejection of claims on an original application, after which no further action was taken for approximately five years, amendments were made enlarging the scope of the invention as originally presented, so as to cover other improvements which might have come into public use. There is no similarity to the case at bar in that regard.

A careful reading of the Sayles case renders it apparent that the Court was dealing with inventions which had to do with *"forms"*, the improvements made consisted of "better forms" for doing the same thing. They involved no new functions, the application of no new principles.

The entire argument for narrow construction, contained in the brief of Defendants, is built up on this leading case, which, beyond doubt, is sound and logical as applied to inventions for slight improvements, limited to specific forms as to the structural elements, in which

no new principles are applied and no novel functio: performed.

We have been confronted by the same arguments, claimed to be supported by the same line of cases cited in the brief, in all the cases which have been filed in which infringement of the Wilfley patent has been charged, and it would, therefore, seem quite unnecessary to take up the cases cited one by one.

It is not true that the invention of the Wilfley patent inheres in an improved or better *form* for doing the same thing. It consists of securing better results, by applying new principles and new functions.

To adopt the contentions of Defendants' counsel would be to say to the inventor that because an art is old, attempts to further advance and improve it, to perfect and render practical, in a commercial aspect, what has not attained such perfection, will not be encouraged by the Courts, if others, perchance, have previously constructed and patented devices which disclose a wide range as to mere matters of "configuration" and "form."

We respectfully insist that under the law and the facts presented in the records in these cases the judgment of the trial Court should be sustained and affirmed.

Respectfully submitted,

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D. EDGAR WILSON,
Solicitors for Complainant-Appellee.

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IN THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT.

In Equity—No. 2291.

DETROIT COPPER MINING COMPANY OF ARIZONA and ARIZONA COPPER COMPANY,

Defendants-Appellants,

vs.

MINE AND SMELTER SUPPLY COMPANY,

Complainant-Appellee.

Brief for Appellants in Reply.

The statement of a few indisputable facts will show that the brief of counsel for the appellee is mainly made up of erroneous assertions and irrelevant cases. The appellants were engaged in the business of mining copper at Morenci, Arizona. They had been using Wilfley tables in their concentrating mills. The Deister table, then just being introduced in the mining country, was brought to their attention and they put a few of them into their mills. The Mine and Smelter Supply Company immediately brought suit against each company for infringement of the Wilfley patent, by use of the Deister machines. The District Court gave judgment for the plaintiff; the defendants appealed to this Court.

The charge of infringement in the bill is in restricted terms. It is said that the defendants were using ore concentrators "with certain riffles upon the tops or concentrating surfaces thereof, which in their

construction and adjustment substantially embodied and contained the improvements and invention patented to said Arthur R. Wilfley, as aforesaid, by said hereinbefore described letters patent No. 590,675, now owned by your orator as aforesaid, and especially the improvements covered and protected by the first, second and seventh claims of said Letters Patent." (Rec., p. 27, last 4 lines, to p. 28, first six lines.)

So that the only question presented here is whether or no the Deister table infringes claims 1, 2 and 7 of the Wilfley patent, or either of them, in respect to the *form and arrangement of riffles on its concentrating surface.* This question must be settled, of course, by reference to the claims of the Wilfley patent. The contention of the appellants is that they are to be taken in the plain, natural, ordinary sense of the words used, read in connection with Fig. 3 of the patent, which shows the deck of the table. The contention of the appellee is that they are to be taken in some much wider sense. In support of that contention counsel for the appellee make what seem to us to be very extravagant claims of excellence in the Wilfley table. We quote the following samples of them, including all the italics, with a reference to the page of the brief from which each of them is taken.

> "It remained to Mr. Arthur R. Wilfley *to discover a principle and make a machine* which was *the first to perform new definite functions* and to so apply the same, taking definite and intelligent advantage of precedent conditions disclosed and taught by the prior art, as *to produce both increased efficiency and capacity* in the

practice of ore-dressing by its use." (Pages 5 and 6.)

"Complainant's contention is that the invention of the patent represents a great advance in the art, that it discloses the application of principles, and the performance of functions never before applied in the art, and that whether we regard Wilfley as a 'pioneer' or an 'improver,' he is a *leader* and not a *follower,* with respect to the combination of the structural elements which were the first to apply those principles and perform those functions, and that the claims of his patent are, therefore, entitled to an interpretation commensurate with the stride which he has made in the art, and with the margin of his invention." (Page 7.)

"We contend that the invention of the Wilfley patent in suit is a *primary invention,* which *performs a function or functions never performed by any earlier invention,* and that as such it covers the apparatus used by the Defendants." (Page 8.)

"Mr. Wilfley's invention is primary because it performs a function NEVER PERFORMED BEFORE, and *which revolutionized the practice of ore concentration."* (Page 10.)

"We think the record shows that Mr. Wilfley's patent invention is more than a mere 'improvement' of what went before, since *'It covers functions never before performed in this art,* and *is'* one of such novelty and importance as to make a *distinct step in the progress of the art,* as distinguished from a mere improvement or perfection of what has gone before.' And it, therefore, is a 'pioneer' invention as defined in the case last cited, and *in considering the question of infringement of the claims of the patent in suit, they are entitled not only to broad and liberal construction, but to a wide range of equivalents."* (Page 11.)

"It remained for Wilfley to discover the principle of the ADVANCING TERMINALS DIAGONALLY

ACROSS THE TABLE, *thereby utilizing two contrasting surfaces* with gradual withdrawal of protection and repeated catching and rewashing and retreatment of the doubtful and elusive grains at the terminals tips." (Page 40.)

"He says that the great advance made by Wilfley in his patent lay in the fact that he placed riffle cleats across the flow of water, and *that he terminated* those riffles by *advancing terminals, bringing each succeeding tip nearer to the concentrates discharge end of the table.* The whole set *of advancing tips forming a diagonal* on the surface of the table." (Page 14.)

"That the *ends* or *terminals* of the riffle cleats *toward the concentrates discharge* end IS THE ESSENTIAL EFFECTIVE PORTION in the operation of the Wilfley table." (Page 15.)

"The foregoing valuable functions were accomplished by the very simple means of adjusting his riffles to terminate on a diagonal line, as illustrated in the patent, and also in the commercial construction. These means are so very simple of construction as to the essential concentrating surface of the table, that a kindergarten pupil of average development could make a perfect sketch of it." (Pages 25, 26.)

It is as clear, therefore, as words can make it that the claim of counsel is that the washing-up function in the Wilfley table along its diagonal line of riffle terminals is a feature of such supreme value that it entitles the appellee to apply the claims of the patent in some far-reaching sense—some sense other than the natural, ordinary meaning of the words, and that they believe that to succeed in doing this is vital to their case.

But this washing-up function is only an incident of the structure of the table. Whatever advantages

there are in it are secured to the patentee by the claims in suit for *the structure*. The function cannot be secured in any other way. Patents are granted for structures, and not for functions, or principles, or modes of operation. The cases are explicit on that point. See on this point the following in addition to those cited on pages 29 to 31 of our main brief:

Carnegie v. *Cambria,* 185 U. S. 403, 425.
Risdon v. *Medart,* 158 U. S. 68, 78, 79.
U. S. Raisins v. *Selma,* 195 Fed. 264.
Penn v. *Conroy,* 185 Fed. 511.
Expanded Metal Co. v. *General etc.,* 164 Fed. 849.
Dick v. *Henry,* 160 Fed. 690.

But the appellee is not content with ever so secure a monopoly of its own table with all its advantages. It wants to extend its monopoly to all other tables, and particularly to the Deister. For this purpose it alleges that Wilfley was a pioneer in the art. On page 8 counsel say: "We contend that the invention of the Wilfley patent in suit is a primary invention, which performs a function or functions never performed by any earlier invention, and that as such it covers the apparatus used by the defendants." This on the basis of its washing-up function. How extravagant! Pioneer inventions are not made in that way. In the greatest patent decision ever rendered —*Railway* v. *Sayles,* 97 U. S. 554— the Court defines a pioneer invention as follows: "If one inventor precedes all the rest and strikes out something which includes and underlies all that they produce, he

acquires a monopoly, and subjects them all to tribute."

In order to stand as a pioneer in the art, Wilfley must have been the *first to invent an ore concentrating table,* not merely the first to put a little improvement on it. That distinction was not his. The art is very old. In the answer of the Arizona Copper Co. in this case is a list of twenty-one ore concentrator patents, all prior to Wilfley, and running back as far as 1862. They were all put in evidence and all sent to the clerk here to be printed in the record, but by some mishap only nine were printed. A list of them, with the pages of the record where they are, is given on page 143 of our main brief. But they are enough to put Mr. Wilfley in the *improver* class.

On pages 5 and 6 of their brief counsel say: "It remained with Mr. Arthur R. Wilfley to discover a principle and make a machine which was the first to perform new definite functions, and to so apply the same, taking definite and intelligent advantage of precedent conditions, disclosed and taught by the prior art as to produce both increased efficiency and capacity in the practice of ore dressing by its use." "Increased efficiency and capacity." This calls for proof. What witnesses have testified that the Wilfley table is more economical in operation than any other—will do more work with less outlay for power? Not one. What witnesses have testified that it will recover more value from the same pulp than any other? Not one. Or turn out purer concentrates? Not one. But these are the points of excellence in an ore concentrator. One careful test is worth a hun-

dred windy asseverations. The appellee never made any, so far as appears. So counsel have to content themselves with big talk. But the appellants did. The only ground that counsel for the appellee have to stand on in this great case is the washing-up action which takes place along the diagonal line of riffle terminals on the Wilfley table. That is one way to do it. But it is not the only way nor the best way, as we have proved by tests applied to the Deister table. One of those tests is described with a cut reproducing one of the exhibits now on file in this court on pages 121 and 122 of our main brief, and another on pages 61 to 65. The latter test showed the Deister table to be far ahead on every point, the final comparison showing that the Deister *saved sixteen per cent more copper from the same pulp* than the Wilfley.

Right there, also, on pages 64 and 65 is a cut showing the relative dimensions of the concentrating surfaces of the Deister and Wilfley tables—the Deister 33.6 square feet, and the Wilfley 78 square feet. The Deister had less than half the concentrating surface and yet would do the same work. It was a perfect little giant in comparison. Mr. Hunt, the witness who produced these drawings and gave this testimony, was superintendent of the mill of the Detroit Copper Mining Co., and was perfectly familiar with both tables, having 38 Wilfley tables at work in the mill at that time. His testimony will be found on page 246 of the record, and the drawings are among the exhibits on file. Counsel on the other side sniff at these tests, but we regard them as highly important. The Wilfley patent was issued in 1897; these

tests were made in 1909—12 years later. The art had been advancing. The Deister table had just come out, and represented the latest and best development of the concentrating table. Counsel for the appellee were present when all the defendants' testimony was taken, and cross-examined the witnesses, and saw all the original exhibits when they were put in evidence. They could have pointed out any error in any of these tests, or could have made tests for themselves. Opportunity was offered to them to verify all the tests and make any others which they wished to, but they never did anything of that sort; never made any tests of their own table, much less any competitive tests with another.

All this is absolutely uncontradicted. So far as we can recall, the plaintiff below never undertook to contradict a word of the defendants' proofs. And, as the phrase goes, "There was a reason." The Wilfley table was indisputably outclassed at every point by the Deister. The Deister was the fruit of progress in the art—of inventive genius applied with infinite painstaking. On pages 16 to 24 of our main brief we have described the table minutely, pointing out its numerous novel and valuable features, and how it embodied elements of excellence found in no other table.

To come back now to the claims in suit. Counsel for the appellee are manifestly oppressed by the consciousness that it is impossible to sustain the decision below unless they can find some way to get rid of the limitations imposed by the plain words of their claims. And it is in a desperate effort to do that, that they

make the extraordinary statements about the Wilfley patent, which we have quoted. But it's no use. The washing up of the material which takes place along the diagonal line of riffle tips on the Wilfley table is not a point of any great merit, as we have shown. The Deister performs the same functions in another way, and better, as we have also shown. The Lampert table, shown and described on pages 140 and 141 of our main brief, performs the same functions in still another way, which is by spraying the material from a perforated pipe just as the concentrates leave the edge of the table. A moment's attention will show how it is done. Fig. 1 (the upper one) is a side view. T is a trough extending along the edge of the table into which the concentrates are delivered from the edge of the table over the bead or flange *a*. Above this part is a perforated pipe H, which sprinkles the material as it is leaving, so as to wash the remaining sands back. The same pipe is shown at H in Fig. 2 (which is a top view of the table) extending along the lower edge of it. This perforated pipe performs the function which is performed by the washboard in the Deister, across which a constant film of water flows to wash the sand out of the concentrates at the last minute.

No. There is no salvation in that function of the Wilfley table to which counsel cling like a shipwrecked sailor to a spar. And then what is left? Nothing, except to take the claims of the Wilfley patent just as they read, and in the same sense of the words as that in which they apply to the Wilfley table, and try them on the Deister table. They do not fit.

But hold! There are two men in the world who say they do. They are of that delectable class of citizens who have opinions for sale. They are prepared to furnish opinions on any side of any question. They are Robert H. Richards and Vernon E. Hodges, a pair of word-twisters to whom we have paid our respects in our main brief on pages 68 to 75. We do not wish to add anything to what we said there, except to recall in a sentence the sinuous path by which they found infringement. Richards said: "The riffled portion of the Wilfley table is a relatively rough surface as compared with the smooth portion, and the unriffled portion is a relatively smooth surface, so we will just substitute those words for the words used in the patent and its claims." "Amen!" said Hodges. Then they agreed that as one part of the Deister table—that part on the head motion side where the riffles are highest—was relatively rough, and that part next the concentrates discharge where the riffles were very low was relatively smooth, therefore the table infringed. How easy!

Beginning at page 34 and extending to 41 counsel take up the file-wrapper and devote 7 pages to an attempt to show that the Blatchly and Kustel patent was not a pertinent reference against the Wilfley application. We have discussed this subject on pages 131 to 139 in our main brief. The sum of it is that the applicant in the course of his application asked for claims in which nothing was said about any progressive shortening of the riffles from the head of the table

towards the foot. They were in that form as described in the specification when filed, and shown in that form in the drawing when it was filed, just as they appear in the patent. But the applicant proposed to leave out that limitation, and submitted claims which did not contain it. The examiner rejected those claims on Blatchly and Kustel, who showed a table just like Wilfley's, only the riffles were of equal length. The applicant could have contested the ruling of the examiner and appealed from his decision, but he did not do it. On the contrary, he acquiesced in the rejection and amended his claims accordingly to read as they now stand. That did him no harm, according to counsel's present contention, because it is on the washing-up action which takes place along the diagonal line of riffle terminals created by the unequal length of the riffles that he depends to save his case. At all events, having acquiesced in the rejection and amended the claims, he is estopped to put any construction on them contrary to the ruling of the office which he accepted.

The remainder of the brief for the appellee, aside from its citation of cases, is taken up with quotations from the testimony of experts, mainly that given by Richards and Hodges. We do not care to add anything further to what we have said in the preceding pages and in our main brief on that subject. But the cases—what shall we do with them? We never saw such a wilderness of authority before. We have counted them and make a total of seventy-three. A good many are cited over and over. It is difficult to eliminate the repetitions, although we have tried to

. Citations and on page 38

do it. But whatever the exact number is, the mass is overwhelming, not so much because there are so many as because they are in such disorder. The value of an authority depends on the parallelism of the case. To give the title of a case and a sentence from the opinion is not enough. What were the facts in the case decided? What were the questions before the Court? What was the Judge talking about? Until we have this information we cannot tell what the decision means. How is the Court to get that information in regard to all these cases? By reading them? That is impossible. It would be a task beyond the time and endurance of the Court. It is not impossible to counsel, although very burdensome. But suppose we do study and discuss them all in a brief. Can the Court take the time to read such an interminable brief as it will be? But it is that or nothing; to discuss them or to ignore them, which would hardly be respectful toward counsel or Court.

So we will start in, beginning nearest home with the case of *Kings Co. R. & F. Co.* v. *U. S. Consol. S. R. Co.,* 182 Fed. 59. This was a suit on a patent for a fruit-seeding machine. The patent was dated February 14, 1899, and is called in the opinion, "the Pettit patent." No machine had seeded raisins successfully before it came into use. A patent had been granted to one Crosby long before—July 31, 1866, for a raisin seeder, but it never went into use. Prior to the introduction of the Pettit machine all raisin-seeding was done by hand. The Court said, in the opinion on page 62:

"A third of a century passed between the date of that patent (Crosby's) and the date of the Pettit patent, and in that time the evidence is conclusive that raisin-seeding was done by hand, and that seeding by machinery was an unknown art. The Pettit machine was the first to go into use, and it went into very extensive and successful use."

Then on page 63 the Court proceeded as follows:

"We find no merit in the contention that by the specific language of claim 17 of the patent the Pettit invention is limited to the precise form there described, and that the patentee is limited to the identical plates shown in the patent drawings as stamped out of a single piece of metal. Section 4888 of the Revised Statutes requires that the inventor shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery. This Statute was complied with in the present case. It does not necessarily follow, from the fact that the claim describes a specific form of construction, that the inventor shall be limited to that form. All depends on his expressed intention, and the scope of the actual invention which he has made. If his improvement is but a narrow one, or if he has used language such as clearly to show his intention to limit his invention to a particular form described, then he is held to the language of his claim, and limited to that specific form. But if his is a pioneer invention, or one of such merit as to be entitled to a liberal construction, the claims will not be thus limited even if couched in specific language, unless the inventor has also shown his positive intention to relinquish to the public all other forms in which his invention might be embodied."

This case is broadly distinguishable from the case before the Court in two particulars. First, it was a pioneer invention. There are no inventions to

which that name belongs with more fitness than those which for the first time substitute machinery for human hands at work. Men cut grass with a scythe and wheat with sickles for generations before the mowing machine and reaper were invented. They were great pioneer inventions. Women bent over their needles for centuries before Elias Howe emancipated them from that slavery by his sewing-machine. Men sewed buttons on shoes by hand until Morley showed them how to do it by machinery. And so on. The Pettit raisin seeder was not a machine of such world-wide utility, but it belonged to the same class.

What analogy is there between these inventions and that of the Wilfley table? The forty-niners did concentrate gold by hand, in pans in the Sacramento Valley in this state; but it was not the Wilfley table that delivered them from that toil. All concentrating tables are evolutions from the miner's pan, but Wilfley is a remote descendant of the common ancestor.

Moreover, and this is the second point to notice, the question of form was not material in the Pettit patent. The details of the mechanism could be varied in many ways without affecting the operativeness of the machine. But here form is everything. The bill charges infringement by the use on the Deister table of riffles "which in their construction, adjustment and arrangement upon said table surfaces substantially embody and contain the improvements and invention so patented to said Arthur R. Wilfley as aforesaid." And it is a narrow question of form,

too. Just the configuration of the surface of a concentrating table. The raisin-seeding case has no application here. It is in a different field.

Krajewski v. *Pharr,* 105 Fed. 519. This was a suit for infringement of a patent for a machine for breaking and cutting sugar-cane, to prepare it for pressing and crushing to extract the juice. It appears from the history of the prior art given in the opinion that it was formerly the practice to put the stalks of the cane stripped of their leaves through the crushing rolls without any preparatory chopping or bruising. This involved a loss of juice. "To secure better results," the Court say, "it was evident that the cane must have preliminary treatment." To meet this want, several inventors patented apparatus for the purpose. The Court on page 517 mentions one English and five United States patents. Krajewski's patent was held to be valid. It contained the following claim:

> "The combination of rollers provided externally with more or less sharp teeth having a zigzag trend in the direction of the length of the rollers, said teeth intermeshing but not coming in contact with each other, and when intermeshed being equidistant from each other, said rollers being geared together in order to maintain their relative positions toward each other, substantially as specified."

It was held by the Court that this language was sufficiently exact; that the words "more or less sharp," meant sharp enough for the purpose, and so with regard to the positions of the intermeshing teeth. But we have a very different case here. The

subject of the Wilfley patent is the ore concentrator described in the specification and shown by drawing in Fig. 3. It and its mode of operation are described with the most minute exactness. The solicitor who drafted it went to a world of trouble to make it plain. Its distinguishing feature is its combination of a group of riffles of progressively increasing length with an unriffled area adjoining their terminals. Reading the language in connection with the drawing, as we are bound to do, it is as clear as words and drawings can make anything that the unriffled portion is a *single space adjoining the terminals of all the riffles.*

We imagine that the application which counsel wish to make of the case is to the word "smooth" in the Wilfley patent. They stand on the ground that "smooth" means smooth enough for the purpose. But when we read the three words, "smooth, plain or unriffled," in connection with the drawing, it is manifest that they mean that one part of the table is to be occupied by riffles and the other part is to be devoid of riffles. Nothing can be clearer than that. And nothing can be clearer than the perfect correspondence of the words of claims 1, 2 and 7 with the table as so described. The Krajewski case does not help a bit.

Roberts v. *Ryer,* 91 U. S. 150. This was a suit upon a patent for improvement in refrigerators. The principal defense was prior invention by one Lyman. The respective theories and objects of the two inventors are fully discussed in the opinion. The fundamental feature of both inventions alike was to

use a current of air in circulation through the refrigerator. One of them had his mind on an *ascending* current of air, while the other had his mind on a *descending* current. One of them described his invention as consisting in the use of an *ascending* current, while the other described his as consisting in the use of a *descending* current. The court decided that the later patent was void; that it was "a mere carrying forward or new or more extended application of the original thought, a change only in form, proportions, or degree, doing substantially the same thing in the same way, by substantially the same means, with better results."

We fancy that counsel for the plaintiff are relying on the sentence quoted above in the citation of this case. It is a familiar proposition, and very good law where it is applicable. But it has no application here. In an ore concentrator the *form* of the concentrating surface is everything. In the Wilfley table the combination of the riffles of progressively increasing length with an unriffled portion adjoining their terminals is the whole invention. To change either element of the combination would be to make a new invention. If the question of validity were in dispute here the doctrine of the sentence quoted above might be applicable. But there is no controversy on that subject, and hence the principle stated has no application to the case.

Stow v. *Chicago,* 104 U. S. 547. This was a suit for infringement of four patents for improvements in street pavements. In the Supreme Court only two of the patents were relied on. They were held to be

invalid. As the question of validity is not in issue here the case would not appear on its face to be relevant. We fancy, however, that in reading the case counsel cast his eagle eye on these words on page 550: "A patentee who is the first to make an invention is entitled to his claim for all the uses and advantages which belong to it. . . . Whether he perceived and stated all its advantages is immaterial." This seems a little ambiguous. The first to make an invention. The patentee of every valid patent must necessarily have been the first to make *that invention.* Or the words might refer to the patentee of a pioneer invention, which seems more likely. We should suppose, however, that the words, taken in proper sense, would apply to any patent. Suppose a "use and advantage" should be discovered to-day for the Wilfley table hitherto unsuspected. Suppose it should be found that it could be used to treat rare earths, or sands, or cements, or grains, or cornmeal, or seeds. The owners of it would undoubtedly have a right to use it for any of those purposes. But such discovery would not affect the terms or force of the claims. The acceptance of those by the patentee is a dedication to the public so far as that patent is concerned of all uses and advantages not covered by their terms.

Western Electric Co. v. *La Rue,* 139 U. S. 601. This was a suit for infringement of a patent for improvement in telegraph keys. The improvement consisted in the substitution for the pivots and trunnions on which the key was carried of a flat strip of metal resting at each end on a post to the tops of which it was secured by screws or pivots and to the

center of which strip the lever of the key was fastened. The lever was thus supported in a horizontal position when not in use, and returned to that position by the torsion of the metallic strip when the pressure of the hand of the operator was removed.

The third claim of the patent, which was the only one considered, claimed the device as *a telegraph key,* which is the device used in sending telegrams. The defendant was making a telegraph *sounder,* which is a telegraph receiving instrument, containing a similar combination of elements. In respect to the uses of the two instruments the Court said on pages 605, 606:

> "The use of the combination is practically the same in both instances. There are the same elements of a lever fulcrumed upon a torsional spring, and adjusting screws for regulating the amplitude of the lever movement, and the retractile resistance of the torsional spring. They are used for purposes which differ principally in name. The key transmits the message; the sounder receives it. The material part of the key is a lever which completes and breaks an electric circuit; the sounder consists merely of a lever which completes and breaks a magnetic circuit. . . . Against this new and analogous use of his combination the patentee is as much entitled to protection as if the word 'sounder' had been expressly inserted in his claim."

This is a logical and just decision. But what relevance has it to this case? NONE.

Reece Button-Hole Mach. Co. v. *Globe Button-Hole Mach. Co.,* 61 Fed. 958. This was a suit for infringement of a patent for a machine for stitching buttonholes. The apparatus comprised a frame and a

plate working in combination. The work could be accomplished by movement of the frame, the plate remaining stationary. In the claims in suit movement of the frame was called for. The question is thus stated by the Court on page 960, first paragraph: "The main question relates to the proposition that this patent can in no event cover a machine of which the frame is stationary and the plate moves. It grows out of the fact that in the specifications and claims are many expressions indicating that the frame moves and the plate is fixed." A few lines later the Court says that "nowhere throughout the patent is found any (expression) indicating that the frame might be fixed and the plate movable."

The Court held the invention to be one of a "fundamental character, highly meritorious, and one to be protected by a liberal construction," and reversed decree below which had been for the defendant. From what appears in the report it is to be inferred that the machine would do the work by movement of either the frame or the plate, the other remaining stationary. If so, the two modes of operation were clearly the equivalents of each other, and the invention being one of fundamental character, it was entitled to that range of equivalents. The machine involved is totally unlike a concentrating table, and the decision has no relevance to any question in this case.

Long v. *Pope Mfg. Co.*, 75 Fed. 835. This was a suit for infringement of a patent for an improved steering head for road vehicles. The decision was for the defendant. There is nothing in the decision which is applicable to the case before the Court except

this remark on page 839: "Of course, as usual with other instruments, this applies only when construction is needed, and not when the patent is clear on its face."

That is this case. The Wilfley patent is absolutely clear on its face. The table and its operations are described distinctly and the claims cover it perfectly.

Dunlap v. *Wilbrandt Surgical Mfg. Co.,* 151 Fed. 223. This was a suit for infringement of a patent for improvements in atomizers and vaporizers. The case is an authority for the defendant. The art was an old one, and the invention a narrow one, like that of Wilfley. On page 227 the Court said:

> "A patentee is entitled to every function his device will perform though he was ignorant of it when he procured his patent. But he secures no patent on the function, and a discovery of a new one in a patented device does not operate to enlarge or broaden the letter of his claim. It is the claim which measures the rights of the patentee, *and that which is not claimed is, so far as the particular patent is concerned, dedicated to the public.*"

Miller v. *Eagle Mfg. Co.,* 151 U. S. 186. This is the familiar wheeled cultivator case. Without burdening the Court with a recital of the facts and arguments which make the bulk of the long opinion by Justice JACKSON (who usually wrote short opinions), we will content ourselves with this quotation from page 207:

> "The range of equivalents depends upon the extent and nature of the invention. If the invention is broad or primary in its character, the range of equivalents will be correspondingly

> broad under the liberal construction which the courts give to such inventions. The doctrine is well stated in *Morley Machine Co.* v. *Lancaster,* 129 U. S. 263, 273, where it is said: 'Where an invention is one of a primary character and the mechanical functions performed by the machine are, as a whole, entirely new, all subsequent machines which employ substantially the same means to accomplish the same result are infringements, although the subsequent machine may contain improvements in the separate mechanism which go to make up the machine.'
>
> "Tested by this rule, and in view of the prior devices and the great variety of springs in use previous to the granting of his patent, Wright cannot be treated as a pioneer in the art. Neither can he, nor his assignee, be allowed to invoke the doctrine of equivalents, such as the courts extend to primary inventions, so as to include all forms of spring devices and adjustments which operate to perform the same function, or accomplish the same result."

No more can the plaintiff here be allowed to invoke the doctrine of equivalents so as to include forms of concentrating tables which operate to perform the same functions or accomplish the same result as the Wilfley.

Bossert Electric Const'n Co. v. *Pratt Chuck Co.,* 179 Fed. 385. In this case two patents for improvements in outlet boxes for interior conduits were before the Court.

The patentee made a box of ductile metal and punched out disks to form the holes and then bent the disks back to cover the holes. This made an integral box in which orifices could be opened by driving out the disks. This application of the punching

out process to the box is all that was new in the invention. It was not an invention of great magnitude. The question in the case was whether or not the patentee was bound by his acquiescence in rejections of his claims by the Patent Office while his application was pending. The Court said that "it is the settled rule that inventors must be held to the form of claim which they have accepted under objections from the Patent Office," and found that the claims of one of the patents should be narrowly construed in view of the prior art and were not infringed by defendant; that of the two claims of the other patent sued on, one was limited by the art to its terms and the other of said two claims which did not contain limiting words was infringed. The decision accordingly recognized the well-settled rule of estoppel of a patentee by his acquiescence in rejections of the Patent Office to thereafter seek a construction of his accepted claims which will include that which he abandoned. The case has no other relevance to the present case.

Niles Tool Works v. *Betts Co.*, 27 Fed. 301. In this case the patent involved was for an improvement in turning and boring mills. The improvement related to a counterbalancing contrivance for the machine which consisted of a new arrangement of pulleys and other old elements. The Court upheld the patent, stating the well known rule that a combination of old elements is patentable if it produces new and useful results. This decision has no useful application in the case in hearing. The validity of the Wilfley patent is admitted by the defendant.

The case of *Beckwith* v. *Malleable Iron Range Co.*,

174 Fed. 1001, is to the same effect. The suit was on a patent for a stove in which the patentee made use of a convex rigid back-plate against which a sheet metal water reservoir was clamped. Defendant contended that claim 11 of the patent disclosed no invention on the ground that two of the elements were old and well known. The Court did not accept the argument, and said that it left out the fact that the invention is for a combination of three elements; that "the invention lies in the combination and not in the elements. These several elements are brought into combination to co-act in such a manner as to produce *a new result* or a better result than had been before achieved." The question was one of novelty of invention and has no bearing on the case at bar. The defendant also contended that the patentee should have claimed a "spherical convex back-plate," and not merely a "convex back-plate," upon the theory that the specification and drawings disclosed a spherical convex plate. The Court did not adopt this theory, but upheld the claims according to their terms just as we are contending should be done here.

In *Elizabeth* v. *Pavement Co.,* 97 U. S. 126, the patent before the Court was for an improvement in process of laying wood pavements. Defendant denied the validity of the patent and the Court sustained it because all of the elements of the claims had never been used in the same combination before the patentee. The case has no bearing whatever upon the present case.

In *Louden Machinery Co.* v. *Strickler,* 195 Fed. 751, the patent in suit was for improvements in hay

carriers. The patent was one appearing in a crowded art. The patentee applied a direct swivel connection between the dog and grappling hooks. The defendant's contention was that to save the claims of the patent from anticipation, it was necessary to limit the dog to one with a cut-out base, the defendant's dog having a solid base. The Court found that there was nothing in the prior art requiring any such limitation and held the claims valid and infringed. Here again is a patent for a device in which form of mechanical details is not essential. The device is totally different from an ore concentrator in which the form of the deck is the all-essential element. The case gives no light upon the questions involved in the present case.

In *Metallic Extraction Co.* v. *Brown,* 104 Fed. 345, the suit was for infringement of a patent for an improvement in double-deck ore roasting furnaces. In prior devices for the same purpose the stirring machinery was operated by chains and trucks which were drawn through the center of the furnaces where they were exposed to the heat, dust and fumes of the ore and soon destroyed. The patentee overcame this very serious defect by locating the chains and trucks in a supplemental chamber adjacent to the side of the roasting chamber and separated therefrom by a slotted wall or partition. The defendant's device had a supplementary chamber underneath the roasting chamber. The contention was that the invention covered by the first claim of the patent must be confined to a supplemental chamber at the side of the main roasting chamber because of the state of the

prior art. The Court found that the patentee was the first to conceive the idea of constructing a supplemental chamber adjacent to the oven of an ordinary ore roasting furnace and locating the stirring operating mechanism therein for the purpose of shielding it from the heat and prolonging its life, and that he made a marked advance in the art, even if his invention could not be properly termed a pioneer. The Court said, in refusing to follow the defendant's contention:

> "We are unable to find in Brown's specification, considered as an entirety, or in the art at the time his application was filed, sufficient reasons to warrant us in holding that he intended to claim less than what now appears to have been his full invention, and that the language of his claim locating the supplemental chamber 'at the side of the main roasting chamber' was used deliberately for the purpose of limiting it. We can conceive of no reason for such a self-imposed limitation, since it is obvious that whether the supplemental chamber was placed at the side of the main roasting oven, or underneath it, it would operate in the same manner and produce the same result."

The conclusion of the Court was right. There was a machine which had a serious defect in its mechanical structure which the patentee was the first to overcome. Form or arrangement of parts were not important, or essential to accomplish the desired end. In the present case the form of the surface of the deck of the ore concentrator is the essential part of the invention, and the specification of the patent clearly and very pointedly states that the invention consists in the arrangement of riffles of unequal

length with a smooth space adjoining their terminals upon which space the final cleaning of the concentrates is effected; and this limitation, together with the state of the art at the time the application was filed necessarily confines Wilfley to the language of his claims. The ore-roasting furnace decision does not aid the plaintiff in the present suit.

In *Brammer* v. *Schroeder,* 106 Fed. 918, the patent in suit was for an improvement in means for operating washing machines and related particularly to devices for translating the continuous rotary motion of a horizontal shaft in the same direction into the reciprocating rotary motion of a vertical shaft in opposite directions. The patentee was not the first to conceive the idea nor to provide means of performing the translation. His advance over the prior art was the combination of a "sliding cog-bearing cylinder by which alone the reciprocating rotary motion was imparted to the operating shaft" with other old and familiar elements. His first claim specified the combination of the sliding cylinder with a double row of teeth or cogs upon it and a driving shaft having a wheel on it for engaging the teeth on the cylinder. The defendant used the sliding cylinder with cogs on it, but used different means for holding the cogs in mesh with the driving pinion, and there were other differences in details of construction.

The Court found for the plaintiff, holding that the constructions in the defendant's device, which differed from those in the patent, were mere details—mere means of union and operation of the elements of the combination and not essential elements of the

combination, that they were "obvious mechanical devices to unite and operate the appellee's combination." The state of the art disclosed many devices adequate to accomplish that result, and the patentee did not describe the form of his cylinder as part of his invention—form was not essential to the invention.

The decision has no relevance to the present case, as form was not material to the invention, and the Court could very properly find that a mere change in the form and construction of certain elements of the combination which produced the same result would not evade the patent. Wilfley being an improver in an art where form is material he is entitled only to his own form under the rule announced in *Railway* v. *Sayles,* which rule is approved by the Court in the case of *Brammer* v. *Schroeder* we have just been discussing.

In *McSherry* v. *Dowagiac Co.,* 101 Fed. 716, the patent in suit was for an improvement in grain drills. The improvement consisted in the provision of draft rods attached at one end to the furrow cutting shoe of the drill and their other ends were pivoted to the frame of the drill. Two spring pressure rods were secured at one end to two clamping plates, which plates were pivotally connected to the draft bars. The other ends of the pressure rods were pivotally connected to a rocker arm by the rotation of which the spring rods were depressed to place tension on the draft bars and the shoe for the purpose of providing pressure on the shoe. Similar draft bars were pivotally connected to the pressure rods and also se-

cured to the covering wheel. The defendant made use of the shoe, the covering wheel, the draft bars and the spring pressure rods of the patent, but provided a different form of connection between the bars and pressure rods—it omitted the clamping plates.

The defendant sought to hold the claims of the patent to the specific clamping plates described in the patent, but the Court refused to so limit them because there was nothing in the art or record to require it, and because the patentee did not show any intention to confine himself to that construction, and because the form described was not of the essence of the invention. It follows that the patent was more than a mere improvement and was entitled to a reasonable range of equivalents. The decision has no relevance to the present case where form is most essential.

In *Penfield* v. *Chambers Bros. Co.,* 92 Fed. 639, the five patents sued on were for improvements in brick-making machines in which the patentee claimed a circular cut-off reel for effecting a square cut of the moving clay bar into brick lengths. The cutting wires were secured to the reel which were drawn through the clay bar, and to provide a variable speed for the reel in relation to the speed of the moving clay bar so that the wires would pass through the bar in a straight line, the patentee provided a two-winged cam which regulated the revolution of the reel. The claim was broad and called for mechanism to cause the reel, with the cutting wires attached thereto, to rotate in unison with and in the same direction as the clay bar so as to sever the bar into brick lengths.

The defendant's mechanism was substantially the

same as the plaintiff's except that he substituted for the rotatable cam and the wires fixed to the periphery of the reel, radially moving cutting wires and a fixed cam in the frame of the reel in which the wires engaged as they progressed through the clay bar.

The Court held that one of the patents in suit involved a high degree of invention but that the defendant had taken a different way of solving the problem of variable relative motion from that of the patent; that his scheme was more like the prior art than the patent, and did not infringe the claims. The facts of the case and the Court's decision are in favor of the defendant in the present case and support our position and contention.

In *Autopiano Co.* v. *Amphion Piano Player Co.*, 186 Fed. 159, the patent in suit was for a web-guiding device to regulate the lateral displacement of note sheets in musical instruments. In the prior art the note sheet was perforated along its margins and the sheet was caused to track properly by flanges on the rollers. This arrangement was very objectionable because the edges of the note sheet became injured. The patentee, for the purpose of overcoming this objection, made use of a surface control. He omitted the perforations in the margins of the note sheet and used devices which were automatically actuated by the sheet, which sheet when in its normal or central position served to hold the sheet-guiding or centralizing devices out of operation, and which by its divergence to one side or the other allowed the appropriate guiding or centralizing devices to come into operative contact. The object, therefore, was to avoid edge

control and accomplish a control by means of the margins of the sheet itself without any perforations.

Defendant made use of an edge control. Its note sheet did not normally close openings in the tracker bar, which openings would be exposed by the sheet should it deflect laterally on the tracker bar, as was the case in the device of the patent in suit. Defendant contended that the claims of the patent were limited to surface control by the specification and prior art and could not be expanded to include edge control. Plaintiff contended that the patent was a pioneer because it made possible an 88-note player whereas previous to the invention a 65-note player was the only one which was practicable; and that, therefore, the patent was entitled to a liberal construction.

The Court held that the patent was not a pioneer in the art; that it was a mere improvement or perfection in what had gone before. The result was an improvement or perfection upon the flange control. The Court said:

> "In one sense, it is, of course, true that any invention must be a distinct step in the progress of the art, but the pioneer step must be in a new direction, not along the path already indicated by what had gone before. Moreover, even in the case of a pioneer patent, the claims cannot be expanded so as to cover devices which are clearly excluded and the language of the specifications coupled with the claims themselves do not admit of the necessary expansion without disregarding the express limitations which O'Connor (the patentee) chose to impose upon himself for whatever reason that may have been."

The Court held that the patentee, while his application was pending in the Patent Office, expressly limited himself to the combination covered by his claims.

The decree was noninfringement.

This case bears strongly upon our contention in the present case. Wilfley clearly confined himself in his specification to the combination called for by his claims, and, as he is not a pioneer in the art of ore dressing, but a mere improver therein, he is not at liberty to broaden out his claims, nor can he include therein that which he has excluded.

In *Malignani* v. *Jasper Marsh Consol. El. Lamp Co.,* 180 Fed. 443, the patent in suit was for an improved process for evacuating incandescent lamps. The claim in suit called for several steps and the defendant sought to defeat the claim by contending that the patent, both in the specification and claim, directs that after the partial exhaustion of the bulb by means of a pump, the pump connection is to be sealed off before the filament is incandesced at all, and that such step was impractical and inoperative.

The Court held that the claim was not inoperative, and was valid and infringed; that there was nothing in the prior art anticipating the conditions created by the patent in a sealed bulb partially exhausted; and that no one before the patentee had learned that it was practical to finish the exhaustion of a globe by suspending pump action, sealing the bulb, introducing a vapor and making the filament highly incandescent. In view of the facts in the case the Court would not hold that the process described was *inoperative;* and made the statements of law which are

quoted on page 12 of plaintiff's brief in the present case. The case has no relevance to the present case. There is no claim here that the Wilfley patent is inoperative nor that there is any ambiguity or indefiniteness in the language of the patent. On the contrary the validity and operativeness of the Wilfley patent are admitted and the language of the patent is exceedingly clear.

In *McCormick Co.* v. *Aultman Co.,* 69 Fed. 371, the patents in suit were for improvements in twine binders. Previous to the first patent there were numerous patents for automatically binding grain, but the patentee of the patent in suit was the first to successfully bind grain in the field. The Court found that the patentee was the first to make use of toothed segments for effecting a compression of the bundle at the waist and the pressing and packing of the same against a triggering resistant; and that this step made the first practicable automatic binder. Accordingly the patent was substantially a pioneer in the art; and mere form of those parts was not material.

Robins Conveying Belt Co. v. *Am. Road Mach. Co.,* 145 Fed. 923. This was a suit on a patent for improvement in conveyor belt apparatus. The validity of the patent was contested, but the main defense was noninfringement. Many cases are cited in the opinion, and the finding was for the complainant. The apparatus was a complicated piece of machinery, and no questions arose in the case which appear to us to be at all applicable to the questions presented in this case.

Vrooman et al. v. *Penhallow et al.,* 179 Fed. 296.

The suit was on two patents for machines for topping vegetables like onions. One of the patents was granted in 1897 to Vrooman and Vrooman as joint inventors, and the other in 1901 to Arba Vrooman, who was one of the former patentees, for an improvement, and who assigned half of his interest to the other Vrooman, so that they were, in effect, joint patentees of both inventions. The Court found that the patent of 1897 was the pioneer in its field. The main question involved related to the proceedings in the Patent Office during the pendency of the first application, and the extent to which the patentees were affected by those proceedings. The following paragraph from an opinion by Justice Shiras in *Hillbone* v. *Hale Mfg. Co.*, 69 Fed. 958, is quoted with approval:

> "It may well be that a patentee cannot be permitted to hold under his patent anything that he has clearly renounced and excluded from his inventions during the prosecution of his application. But surely it has never been the law that mere changes of phraseology to suit the views of the examiner and to distinguish the claims made from those contained in prior applications to which reference has been made can be held to defeat the patent when granted. What is forbidden is the attempt, after a patent has been procured surrendering or disavowing some claims or devices, to recover such renounced and abandoned claims by demanding a broad construction of those allowed."

This has to do with the limitation of the claims of the Wilfley patent by the examiner's reference to Blatchly and Kustel. They showed a table which contained the same elements and the same combina-

tion of them as Wilfley's, broadly stated. They had riffles for concentration and a smooth space adjoining their terminals for washing up. But their riffles were of equal length. Wilfley was therefore required to limit his claims to riffles of unequal length, which was just what he showed in his drawings as filed with his application. Now, as the Court say in the case above, to attempt "to recover such renounced and abandoned claims by demanding a broad construction of those allowed" is not permitted.

Palmer et al. v. *Jordan Mach. Co.,* 186 Fed. 496. The suit was under a patent for apparatus for inverting tubular fabrics. The fabric was first drawn upon one end of a roller so that by taking hold of the end of it, it could be stripped and inverted or turned inside out in the operation. There were 8 claims in issue. The apparatus involved is a curious sort of machine, used as we fancy, in knitting-mills. The finding was for the defendant. We have searched the case in vain for anything pertinent to this case.

Long v. *Noye Mfg. Co.,* 192 Fed. 566. The suit here was on a patent for improvement in radiators for use in automobiles of the so-called honeycomb or cellular type. Three claims were in issue. It was found that the defendant infringed two of them, and not the third. A large part of the opinion is occupied by discussions about the meaning of the word "corrugation." We do not find anything that throws any light on the case before the Court.

Moore Filter Co. v. *Tonopah-Belmont Development Co.,* 201 Fed. 532. This suit was upon a patent

for a process of recovering gold from fine slimes. It is the cyanide process of which we have heard much in recent years. This method of extracting metal from waste matter has nothing in common with the method of extraction by concentrating tables. The patent was upheld as one for a pioneer invention, and the finding was for the plaintiff. It was held that as the apparatus shown in the patent was merely to illustrate a method of practically applying the process, the process patentee was not limited to the use of that type of machine. We have gone through the case carefully without finding anything that appears to us to be pertinent to this case.

Marshall & Stearns Co. v. *Murphy Mfg. Co.,* 199 Fed. 772. The suit here was on a patent for improvement in "apartment wall furniture." The structure consisted of a door or panel centrally pivoted at the top and bottom in the wall of the apartment so as to be turnable on a vertical axis. On one side was hinged a bed which could be folded up against the door when not in use. On the other side was any article of furniture for daylight use, such as a wardrobe, mirror or book-case.

The structure which was alleged to infringe was an ordinary door hinged at the side, upon the back of which was mounted a bed. The plaintiff was claiming a liberal construction of his claim. But it appeared from the file-wrapper that while the application of Jordan, the inventor, was pending an interference was declared between it and another application. The interference was decided against Jordan, who thereupon canceled some of his claims

and substituted some more limited ones. The interference application was subsequently abandoned and no patent was ever issued on it. Jordan then claimed that by reason of that abandonment there was no anticipation of his combination, and that he was entitled to the liberal construction of his patent which would have been allowed him if his original claims had been allowed. But the Court held against him, saying this:

> "This proposition cannot be sustained. Acquiescing in the rulings of the officials of the Patent Office, Jordan, in order to obtain his patent, limited his claims, and it can make no difference with the result that the interfering application was abandoned. The limitations so imposed cannot be disregarded."

After citing numerous cases the opinion quotes the following from *Morgan Envelope Co.* v. *Albany Perforated Wrapper Paper Co.,* 152 U. S. 425:

> "But the patentee having once presented his claim in that form, and the Patent Office having rejected it, and he having acquiesced in such rejection, he is, under repeated decisions of this Court, now estopped to claim the benefit of his rejected claim, *or such a construction of his present claim as would be equivalent thereto."*

On pages 34 to 42 of their brief counsel for the appellee discuss the subject of the action of the Patent Office in rejecting claims in their application by reference to the Blatchly and Kustel patent, and attempt to argue that the amendment of their claims which they made in obedience to the requirement of the examiner did not amount to an admission of the pertinence of the reference. We submit that the

foregoing decision completely answers that contention.

We have now examined and commented on 26 cases out of those cited in the extraordinary brief for the appellee. We think we have gone far enough to show that that brief is made up mainly, as we said at the outset, of irrelevant cases. We have here a very narrow question of law; we have a patented device of the utmost simplicity—just the riffled surface of a concentrating table, for we must not forget that by the express terms of the bill nothing is in issue except the "construction, adjustment and arrangement of the riffles" upon the table surface. The table is before us in models and drawings. It presents a clean-cut, two-part combination of a riffled surface and an unriffled surface. The three claims in suit state that combination in the plainest terms. Does the Deister table infringe those claims? No cases are relevant here that do not bear on that question. We have found none that do among the 26 which we have discussed. Shall we go on piling up pages for this busy Court to read in the discussion of the remainder? It seems to us that we shall be doing a wrong rather than a service to the Court. There are several other subjects which must be discussed in this brief to make it in proper sense a reply, as it must be, to which we now ask the consideration of the Court.

(1) There is a view of the case presented in the appellants' brief which appeared to us at the time to be sound, and if sound, controlling. It is in substance, first, that the whole field of ore concentrators

is one of very narrow inventions as respects the configurations forming the surface of the table, that the patents in that field are all improvement patents and must in consequence be limited to the very inventions described in them, or mere evasions thereof. On that subject we made a very painstaking study of the authorities and brought together a chain of cases reaching from 1857 to the present time, made up of decisions in patent cases of that kind—narrow improvement patents. We referred to the cases in detail, giving a short statement of the facts and issues in each, with a brief quotation from the opinion. That part of our brief occupies from page 76 to 97. We were, ourselves, surprised at what we found. No such array of cases on that subject had been brought together before to our knowledge. We thought it would be impossible for the Court to ignore them, and we think so yet. But the brief for the appellee makes no reference to them whatever. We cannot believe that the Court will treat them so cavalierly. What final effect the Court will give to them we cannot foresee. Perhaps not so sweeping as we argued; perhaps only to the extent that ore-concentrator patents are to be closely rather than broadly construed, and the monopolies created by them to be restricted in their scope. But that the Court will give *some effect* to them we cannot doubt.

(2) On pages 16 to 24 of our brief we describe the Deister table with microscopic minuteness, not omitting a square inch of its surface, and the operation of every riffle on it, with the purpose to show that it was an *advance in the art over the Wilfley table*—a

new invention. We covered this ground as well as we could in the oral argument. But the appellee's brief takes no notice of that part of our brief. This subject is important because, as we shall show a little later, the law is that if the Deister table is entitled to rank as a *new invention,* simply, it does not infringe.

(3) We wish to add a word of comment on the decision of the District Court upon a point that we now think was not quite adequately covered by the discussion of the opinion in our original brief. On page 73 of the record, after quoting the claims in suit, the Court proceeds as follows:

> "While the language differs in each one of the specifications quoted, it is quite apparent from a reading of these claims that in the view of the inventor the smooth, plain or unriffled area of the table constituted an important adjunct to the form and arrangement of riffles described, and discharged a function essential to the successful operation of his device. This is shown by the fact that in each and every instance in which he set forth and described his table, the form and arrangement of riffles is described as being in association with a smooth or unriffled surface. But, assuming that the association of the riffled surface of the table with the smooth or unriffled surface was deemed important or even essential in the view of the inventor, yet if the essential feature of his device, which was new in principle and which in itself constituted a distinct improvement in the art of concentration, may be used in other combinations or with other devices but yet so as to discharge the same or an equivalent function, does the want of foresight in Wilfley in specifying its use in conjunction with such 'smooth or unriffled surface' limit the pro-

> tection afforded by his patent to cases where his arrangement of riffles are similarly combined; that is, with a smooth or unriffled surface, or its mechanical equivalent? To answer this inquiry affirmatively would be to construe the patent as though it was 'for a narrow and specific improvement in an old art,' and nothing more than an improvement."

What was this "want of foresight in Wilfley"? What mistakes did it lead him into? In the first sentence of the quotation we are told that it is apparent that, "In the view of the inventor the smooth, plain or unriffled area of the table constituted an important adjunct to the form and arrangement of riffles described." Five lines further down it says: "But, assuming that the association of the riffled surface of the table with the smooth or unriffled surface was deemed important or even essential in the view of the inventor, yet if the essential feature of his device which was new in principle and which in itself constituted a distinct improvement in the art of concentration, may be used in other combinations or with other devices, but yet so as to discharge the same or an equivalent function, *does the want of foresight in Wilfley* in specifying its use in conjunction with such 'new or unriffled surface' limit the protection afforded by his patent to cases where his arrangement of riffles are similarly combined; that is, with a smooth or unriffled surface, or its mechanical equivalent?"

That is to say, it was a want of foresight in Wilfley to limit his claims so closely in respect to the "smooth or unriffled surface." He ought to have omitted that

feature of his claims, and as it was owing to a want of foresight that he did not, the Court felt warranted in disregarding it. And so in the last four lines of page 74 the Court says: "It seems to me that the Wilfley patent, in view of its history and its importance, should be construed, *notwithstanding the language used by the inventor in his application* as covering the appropriation by the Deister table of this essential feature of the Wilfley table." All of which means that he finds for the plaintiff "notwithstanding the language used by the inventor in his application." This shows unquestionably that the Court recognized that its finding was not in accordance with the terms of the claims. But it found as it did because it was impressed with the conviction that there was some extraordinary merit in the Wilfley patent, in view of which it was right to find infringement notwithstanding the finding was not in accordance with the terms of the claims. It is easy now to see where that impression came from. It was from the experts. The same sort of talk which we have quoted from the brief of counsel at the beginning of this brief.

(4) The appellants are not charged here with imitation of the Wilfley commercial table, and if they were they could not be held on that charge. They are liable only for *infringement of the Wilfley patent.* The table as put on the market, and the patent are two different things. This makes it necessary to look into the patent. It is printed on pages 299 to 303 of the record. The tapering riffles on the commercial table are an evolution. No one knows where

they came from. If Mr. Wilfley had been the inventor of them and had covered them by his patent and his claims he would have been master of the field so far as we can now see. The appellee's experts treat the case as though that were a fact. On pages 143 and 144 of the record Richards says that: "The Wilfley table was a great advance stride, and initiated a new era in concentrators; Wilfley put his riffles on with the diagonal endings—the advancing terminals, as they are called, and from a structural point of view also tapered his riffles and so added to the strength of the machine in getting an automatic control of the line of change of detention by such means."

But the only form of riffles shown in the patent is the metallic riffle commonly called a Z bar, that is, a strip of sheet metal pressed into the form of the letter Z. On sheet 1 of the drawings in Figs. 5 and 7 are shown cross-section outlines of the riffle (Rec., p. 299). On page 1 of the patent (Rec., p. 301), lines 32 to 40, there is this description of it:

> "Let the numeral 5 designate the table provided with longitudinal riffles 8, attached to its upper surface. These riffles are of unequal length and angular in cross section. The vertical or upwardly projecting part of the riffle is designated by the reference-character 8^a, and the upper part, which lies parallel with the bed of the table, is designated by the reference-character 8^c."

Then on page 2 of the patent, column 2, lines 67 to 98 (Rec., p. 302), there is a detailed description of the action and superior utility of the angular metallic riffles, which is as follows:

"The function of the angular riffles will now be described in detail.

"The part 8^a of the riffles would be sufficient alone to catch the larger and heavier particles of mineral, but some of the more minute particles would be forced over the riffles and carried downward with the gangue and perhaps finally lost were it not for the part 8^c of the riffles, which checks this tendency and allows specific gravity to prevail, the same as in hand-panning. It is well known that the finest particles of mineral can be saved by hand-panning. The specific gravity of the finest particles of gold is, of course, the same as the largest nugget, and if the proper conditions exist the minute particle can be saved as well as the nugget. The object of my angular riffles is to produce the conditions necessary to save not only the largest but also the finest mineral particles. Under ordinary conditions these fine particles when acted on by a current of water are carried along with the water, and consequently lost with the gangue. The upper part 8^c of my riffle checks the tendency of these light particles to pass over the riffles with the water. Hence they are confined by the bed of the table below the part 8^c of the riffles above, while the part 8^a of the riffles checks their downward movement. Hence under the influence of the table's movement or vibration the mineral particles, both fine and coarse, are caught by the riffles."

It follows that that part of the "advanced stride" which Wilfley made in the art, according to Richards, which consisted in the use of tapering riffles, is something entirely outside the patent. If it were not for the tapering riffles on the Deister table the appellee would have no pretense of any case against it. And as the patent does not cover the tapering riffles, how can we be said to infringe? If this view is sound, do we need any other defense?

It is not uncommon in the exploitation of patented inventions to introduce new features of construction in the apparatus suggested by practical experience. They usually improve it for use. The tapering riffles were such a feature and were an improvement in the table for use, no doubt. But a suit for infringement must rest on the patent, and nothing infringes that does not embody the construction described and claimed in it.

(5) There is an important line of cases referred to in the brief for the appellants and a defense based on them of which no notice is taken in the brief for the appellee, notwithstanding it presents a manifestly complete defense to the suit. The leading case of the series referred to is *Westinghouse* v. *Boyden Power Brake Co.,* 170 U. S. 537. All things considered, this is the greatest patent case of recent years. The subject matter was the most important that exists—the control of railway trains. The questions that arose in it covered nearly the whole field of the patent law. But the point that is pertinent here is that relating to the enforcement of the literal claims of patents against devices that constitute new and subsequent inventions. The doctrine of the case as applicable here is summed up in this quotation from the opinion on page 568:

> "The patentee may bring the defendant within the letter of his claims, but, *if the latter has so far changed the principles of the device* that the claims of the patent, literally construed, have ceased to represent his *actual invention,* he is as little subject to be adjudged an infringer as one

> who has violated the letter of a statute has to be convicted when he has done nothing in conflict with its spirit and intent."

The brief for the appellants contains, on pages 124 to 131, a discussion of this case and numerous subsequent cases in which it has been followed. The doctrine of the case is indisputably established in the law. Its controlling application here depends wholly on the question whether or no the Deister table is justly to be considered a *new invention* as compared with the Wilfley table. Upon that question the evidence is such as to admit of no doubt. Take these facts together: It came into the art ten years later than the Wilfley; it is less than half as large as the Wilfley, but will do as much work and do it better, and accomplishes these results by means which involve invention of the most meritorious kind. We produced in court at the hearing the original exhibits put in with the proofs, and handed up to the Court reduced copies of them made from zincograph cuts contained in our brief and mounted on cardboard. For fear those may not have been preserved we will go over that ground again very briefly.

First: The Deister table, as we tried to show at the hearing with the aid of a model, embodies a combination of riffles capable of doing far more perfect work than can be done on the Wilfley table, as proved by actual and undisputed measurements and tests. This superiority rests, first, on the presence of the high riffles on the table by which pools are created extending over nearly half the surface of the

table in which concentration goes on with the greatest possible rapidity and perfection. Next, on the action by which the concentrates are at once conveyed along the riffle troughs to the concentrates discharge where they are given a final washing and delivered in a condition of the most perfect purity into the concentrates box. All this is described in the brief for the appellants on pages 16 to 24 more minutely than we could do it at the hearing or can do it here. The cuts showing the relative areas of the tables are at page 65 of the brief; the competitive test at pages 61 to 65, and the output test of the Deister table at pages 120 to 122.

We submit that the proof that the Deister concentrator is a "new invention" within the meaning of the Westinghouse case and those following it is complete, and that we have in those facts a good defense to this suit.

(6) Finally, it has been established by many decisions that in an infringement case the burden of proof is on the plaintiff, and that if upon the whole case it is uncertain where the preponderance is in law and fact, the decision must be for the defendant.

This is a proposition which hardly needs authority. But there is authority in abundance. For instance, in *Fried Krupp Aktien-Gesellshaft* v. *Midvale Steel Co.,* 191 Fed. 588 (C. C. A. 3d Cir.), which was a suit on a series of armor plate patents, Judge BUFFINGTON said on page 591 of the report:

> "Infringement is not only a question of fact, but is a tort or wrong, the burden of establishing

> which, as in all torts, clearly rests on those who charge such wrong. The absence of actual fact proof is not met by the presence of expert speculations no matter how voluminous."

One would think that Judge BUFFINGTON had a foresight of the testimony of the experts in this case.

In *Béné* v. *Jeantet,* 129 U. S. 683, the suit was on a patent for refining and bleaching hair. All the testimony before the Court on the point in dispute was that of two experts, one of whom testified to facts within his knowledge, and the other to theories on the subject. There is substantially the same difference here. The evidence for the appellants rests on ascertained and demonstrated facts, measurements and tests; that for the appellee on theory and asseveration. The Court by LAMAR, J., said, on page 688:

> "We think the complainants did not make out a case of infringement. There is not a preponderance of evidence in their favor."

See, also, Walker on Patents, sec. 522 and cases cited.

3 Robinson on Patents, sec. 1041, where an immense number of cases are gathered together.

We feel as though we were abusing the kindness of the Court in filing such a long reply brief. But we were puzzled to know what to do with the extraordinary collection of cases in the appellee's brief. We thought it would not quite do to put them aside without any examination, and so took up the task as bravely as we could. But our time, strength and patience gave out at the 26th. That work has filled

more than half of this brief. The remainder we submit to the Court with the hope that it may be found pertinent and convincing.

Respectfully submitted,

ROBERT S. TAYLOR,

ELWIN M. HULSE,

Solicitors and of Counsel for Appellant.

IN THE

UNITED STATES CIRCUIT COURT OF APPEALS

FOR THE NINTH CIRCUIT

Detroit Copper Mining Company of Arizona,
a Corporation,

Appellant,

vs.

The Mine and Smelter Supply Company,
a Corporation,

Appellee,

and

Arizona Copper Company, a Corporation,

Appellant,

vs.

The Mine and Smelter Supply Company,
a Corporation,

Appellee.

No. 2291

PETITION AND ARGUMENT FOR REHEARING

The appellants in said causes respectfully ask the court to grant a rehearing in the same and in support of this petition submit the following reasons therefor, and argument thereon.

1. The court erred in its view of the principle and function embodied in the Wilfley table.

2. The court attributed to the Wilfley table a degree and kind of novelty which it does not possess.

3. The court erred in giving undue weight to the fact that it does not appear that any of the concentrator patents prior to Wilfley's was successful or that any of the concentrating tables described therein went into general use.

4. The court disregarded the principle that in the construction of patents for narrow improvement inventions the claims should be strictly construed and the scope of the monopoly narrowed accordingly.

5. The court erred in its failure to give any effect in the case to the decisions of the Supreme Court in *Railway* v. *Sayles,* 97 U. S., 554, and *McCormick* v. *Talcott,* 20 How., 402, and the line of cases following them.

6. The court erred in holding that form is immaterial to the invention covered by the Wilfley patent.

7. The court failed to recognize principles embodied in the Deister table which impart novelty and value to it and distinguish it clearly from the Wilfley table.

8. The court erred in its failure to recognize the advance in the art embodied in the Deister table and the legal consequences resulting therefrom.

9. The court erred in its failure to give effect in its decision to the judgment of the Supreme Court in *Westinghouse* v. *Boyden Power Brake Co.,* 170 U. S. 537, and cases following it.

10. The court erred in finding infringement and affirming the judgment of the District Court.

ARGUMENT

In what follows we shall use for the sake of brevity the word table rather than the words ore concentrator to designate the machines in controversy and so speak throughout of the "Wilfley table" and the "Deister table."

Counsel for the appellee stand now as they have stood from the beginning on the ground that the Wilfley patent and table embody some novel and important principle by reason of which the claims of the patent are entitled to a very broad construction and wide range of equivalents. The claim was urged with so much vehemence in the District Court that the judge of that court thought that there must be some ground for it, and found for the plaintiff without knowing exactly why. Is there any ground for it?

The Wilfley table does embody a principle. If it did not it would not be a patentable invention. Section 4888, R. S. provides that in the case of an application for patent for a machine the applicant "In case of a machine he shall explain the principle thereof and the best mode in which he has contemplated applying that principle so as to distinguish it from other inventions." The word "principle" as here used is manifestly equivalent to "mode of operation." It is that which distinguishes the machine from others of the same class or kind. In the Wilfley table it is found in the combination of riffles of progressively increasing lengths, with a smooth or unriffled space adjoining their terminals. By the flow

of the pulp transversely across the riffles combined with the longitudinal reciprocating movements of the table the process of concentration is so far completed that when the material arrives at the terminals of the riffles only a residue of fine sand remains to be removed to complete the process of concentration. This removal is accomplished by the flow of water down the table and past the riffle tips so that the material as it emerges from the riffle troughs is first subjected to repeated washings and then to a further washing on the triangular smooth space as it is pushed out across it by the longitudinal movement. This final step in the concentrating process is called "washing-up." The combination of parts by which this result is accomplished on the Wilfley table is accurately described in the opinion, beginning at line 5 from the bottom of page 6 of the copy of it furnished to us by the clerk, and continuing to the end of the first paragraph of page 7. And on pages 3 and 4 the patentee's description of the process is quoted from the specification.

Every concentrator must contain some provision for washing-up in order to produce pure concentrates. The residue of sand which remains mingled with the particles of metal to the last minute is extremely fine and washing with water is the only way to separate it from the metal. The way of doing that described in the Wilfley patent is a good way and meets the requirement of the statute that a patentee shall explain the principle of his machine, and does in fact distinguish the Wilfley machine as the statute requires

from other inventions, because this specific way of washing-up is not found in any prior patent.

This is the only distinctive principle embodied in the Wilfley patent or table. What does it signify? As a *principle* it is not patentable. Patents are not granted for principles, or functions, or modes of operation, but for structures. There are many decisions of the Supreme Court affirming this proposition, but these will suffice:

In *Corning* v. *Burden,* 15 Howard, 252, the court said, on page 268:

> "It is well settled that a man can not have a patent for the function or abstract effect of a machine, but only for the machine which produces it."

In *Burr* v. *Duryee,* 1 Wall., 531, 570, the court said:

> "We find here no authority to grant a patent for a 'principle' or a 'mode of operation' or an idea, or any other abstraction. A machine is a concrete thing, consisting of parts, or of certain devices and combinations of devices."

In *Fuller* v. *Yentzer,* 94 U. S., 288, the court said, citing Burr v. Duryee:

> "Patents for a machine will not be sustained if the claim is for a result, the established rule being that the invention, if any,

> within the meaning of the Patent Act, consists in the means or apparatus by which the result is obtained, and not merely in the operation, independent of the mechanical devices employed; nor will a patent be held valid for a principle or for an idea, or any other mere abstraction."

Other cases could be cited by the dozen.

The structure of the Wilfley table is the very culmination of simplicity. Just the group of riffles of progressively increasing lengths with their diagonal line of terminals, the smooth space adjoining the terminals, the water supply and the oscillating movement. This enumeration of parts applies only to the surface of the tables. But that is all that is in question here. If the court will turn to page 11 of the record it will find that in the latter part of paragraph VIII the infringement charged consists in using Deister concentrators "with certain riffles upon the tops or concentrating surfaces thereof, which in their construction, adjustment and arrangement upon said table surfaces substantially embody and contain the improvements and inventions so patented to the said Arthur R. Wilfley as aforesaid." So that there is no issue in the case except that relating to the arrangement of riffles on the surface of the table. It is a pure question of *form*. We have used the word "configuration" in speaking of it, to which counsel for the plaintiff take violent exception. But we think that is exactly the right word to use. The *form* of a coin is its shape, which is round and flat. The superscription on the

faces of the coin are *configurations,* This is a nice and true distinction of words. When we say that the Wilfley table has one configuration of surface on its deck and the Deister table another configuration of surface on *its* deck we are using exactly the right words to describe the distinction.

The file wrapper of the Wilfley patent is in the record on pages 265 to page 305. It shows that the Wilfley application was rejected by the Examiner on a reference to a prior patent to Blactchly and Kustel, No. 258,879, dated June 6, 1882. He did not contest the reference, as he had a right to do. He could have appealed from the Examiner's decision to the Board of Examiners, and from there to the Commissioner of Patents and from him to the court. Instead of making any fight of that kind he amended his claims to avoid the reference and took out his patent as it now stands. There is a copy of the Blatchly and Kustel patent in the record on pages 357 to 361. The drawing is reproduced on page 134 of our brief with a description of the table and its operation. Shall we repeat that here? We must condense, or it will be impossible to say what must be said in this argument to make it intelligible. The sum of it is that the B. and K. table has every feature of construction and operation found in the Wilfley patent except the progressive lengthening of its riffles. They terminate along a line lying at right angles to their lengths. Wilfley's claims were, therefore, limited to read as they stand in the patent, and they must be applied as they read. Taken in that plain, straight forward sense they do not cover

the Deister table and cannot be made to. They describe a *group of riffles of progressively increasing lengths in combination with a single smooth space adjoining their terminals.* There is no such combination on the Deister table. The only testimony offered in the District Court of infringement of the Wilfley claims by the Deister table was that of the expert word-twisters, to whom, we are glad to note, this court makes no reference. The court does, however, say this in the opinion:

> "The improvement made by Wilfley, as measured by the prior art and as proven by the testimony, is evidently of such merit that the claims of his patent are entitled to a reasonably liberal construction. The mere form of his table does not measure the scope of his invention. He did more than to invent a table of a precise form and configuration. He discovered a method of application of principles and an effectual mode of operation, and the appellee should be protected in that feature of the combination which is new in principle and function."

There is no proof in the record of any extraordinary merit in the Wilfley table. There is no evidence that it will treat more material in a day than another table, or do it with less expenditure of power, or get more value out of the pulp, or turn out cleaner concentrates. These are the capabilities that constitute merit in an ore concentrator. There was no evidence at all on the part of the plaintiff on this subject. On this point the court has accepted the vociferation of counsel in the place of proof.

Mr. Wilfley was not a pioneer in the art of the wet concentration of ores. The court finds that in the following words on pages 2 and 3 of the opinion:

> "On referring to the patents introduced to show the prior art, it will be seen that they all contain two elements, a concentrating surface or table, usually consisting of a combination of riffles, and a clear or smooth space, and a reciprocating movement in the form of oscillation, the effect of which is to drive forward the pulp which rests on the surface of the table and to separate and stratify the mineral matter in the valleys between the riffles, while the gangue or base matter passes over to the lower side of the table from which it is thence removed."

This record, however, does not show fully how far down in the line of improvers his place was. On page 47 of the record, in the answer of the Arizona Copper Company, is given a list of 15 ore concentrator patents prior to Wilfley, the first being dated May 6, 1862; and on page 50, in an amendment of the answer, are 6 more, making 21 in all. These patents were all offered in evidence, and copies of them furnished to the clerk of this court to be bound in the record, but for some unexplained reason he inserted only 9. They are found on pages 309 to 361. These are enough to support the finding of the court that Wilfley was an improver, and not a pioneer. The court makes one remark about them, however, which we think is unwarranted. It is this, on page 6 of the opinion:

> "It is true that the use of concentrating tables with riffles and with smooth surfaces was old, and that patents prior to Wilfley's showed the wet concentration of ore on automatically vibrating tables having transverse riffles or corrugations for the purpose of arresting the metal and separating it from the gangue. It does not appear, however, that any of the prior patents was successful, or that any of the concentrating tables described therein went into general use."

The issue of a patent by the Commissioner is presumptive evidence that the invention described in it is new and useful. The burden of proof is on anyone who disputes either of those facts to prove his contention. So that when the defendant below put these patents in evidence it was not called upon to prove that the tables described in them had gone into general use. This point is expressly covered by the following extract from the opinion in the recent decision of this court in the case of *Hyde* v. *Minerals Separation, Limited,* et al, as published in the Mining and Scientific Press. The proposition is abundantly supported by the authorities cited by the court.

> "But the appellees say that the Froment patent is a paper patent, and that therefore it is to be disregarded. A paper patent, if it fully describes an invention, whether it be a machine, device, or process, is just as effective to show anticipation as a patent which describes an invention which has gone into extensive use, for a presumption of operativeness and of some utility attend the granting of Letters Patent. Packard v. Lac-

> ing Stud Co., 70 Fed. 66; E. L. Watrous Mfg. Co. v. American Hardware Mfg. Co., 161 Fed. 362; National Chemical & Fertilizer Co. v. Swift & Co., 104 Fed. 87, 91; Universal Winding Co. v. Willimanitic Linen Co., 82 Fed. 228; Van Epps v. United Box Board & Paper Co., 143 Fed. 869; Ironclad Mfg. Co. v. Dairyman's Mfg. Co., 143 Fed. 512, 515; Dashiell v. Grosvenor, 162 U. S. 425, 432."

We suppose it would be open to the opposite party in such a case to offer evidence showing that the invention had never gone into use, or was unworkable. But no such evidence was offered in this case. So that these patents have their full force and effect in limiting the scope of the Wilfley patent.

We have assigned for error (No. 4) that the court failed in its decision to recognize the principle that in the construction of patents for narrow improvement inventions the claims must be strictly construed and the scope of the monopolies narrowed accordingly, and in particular, (No. 5) that the court erred in its failure to give any effect in the case to the decisions of the Supreme Court in *Railway* v. *Sayles,* 97 U. S., 554, and *McCormick,* v. *Talcott,* 20 Howard, 402, and the line of cases following them. These two decisions are undoubtedly the most important decisions in patent causes ever made by the Supreme Court. They and the cases which follow them cover the whole period of greatest activity in the patent field. *McCormick* v. *Talcott,* was decided in 1857. At that time the total number of patents which had been granted from the creation of the Patent Office was about

20,000; in 1911 it was over 1,000,000. In our brief we referred to and quoted from 17 cases expressly following one or the other of these decisions. We do not believe it possible to pile up another such mountain of authority on a patent question. And yet this court never so much as mentioned them. How can counsel be of any assistance to the court or any service to their clients if their citations of authority, no matter how numerous or weighty, receive no consideration from the court? Of course, if the cases were not pertinent to the facts no wrong would be done by ignoring them, no matter how much it might wound the pride of counsel.

But these cases are pertinent here. This court has found that the art of wet concentration of ores was old, as stated in an extract from the opinion which we have already quoted. The distinction between pioneers and improvers was never more clearly stated than by the Supreme Court in *Railway* v. *Sayles* just referred to, in this famous passage:

> "In such cases, if one inventor precedes all the rest, and strikes out something which includes and underlies all that they produce, he acquires a monopoly, and subjects them to tribute. But if the advance towards the thing desired is gradual, and proceeds step by step, so that no one can claim the complete whole, then each is entitled *only to the specific form of device which he produces,* and every other inventor is entitled to his own specific form, so long as it differs from those of his competitors, and does not include theirs."

In this case, as we have seen, the terms of the bill make the form or configuration of the table deck of the ore concentrator the *sole issue in the case.* The changes which may be made in that feature of a concentrating table—the form and arrangement of its riffles, are innumerable, so that the invention is in its nature a narrow one. Wilfley being an improver, and not a pioneer, we have the case of a narrow improvement invention, and one to which our great line of authorities applies with the closest pertinence. Are we not justified in feeling that the court did us injustice in ignoring our argument and authorities?

On page 8 of the opinion the court states in these words a principle which, as an abstract proposition is entirely sound:

> "But form is immaterial unless it is essential to the result, or indispensable by reason of the state of the art to the novelty of the claim. When the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention. Winans v. Denmead, 15 How. 330; Metallic Extraction Co. v. Brown, 104 Fed. 345; Benbow-Brammer Mfg. Co. v. Simpson Mfg. Co. 132 Fed. 614."

But that is not this case. As we have already pointed out, the charge in the bill is that the defendant infringed by using tables "with certain riffles upon the tops or concentrating surfaces thereof which in their construction, adjustment, and arrangement upon said table surfaces substantially embody and contain the

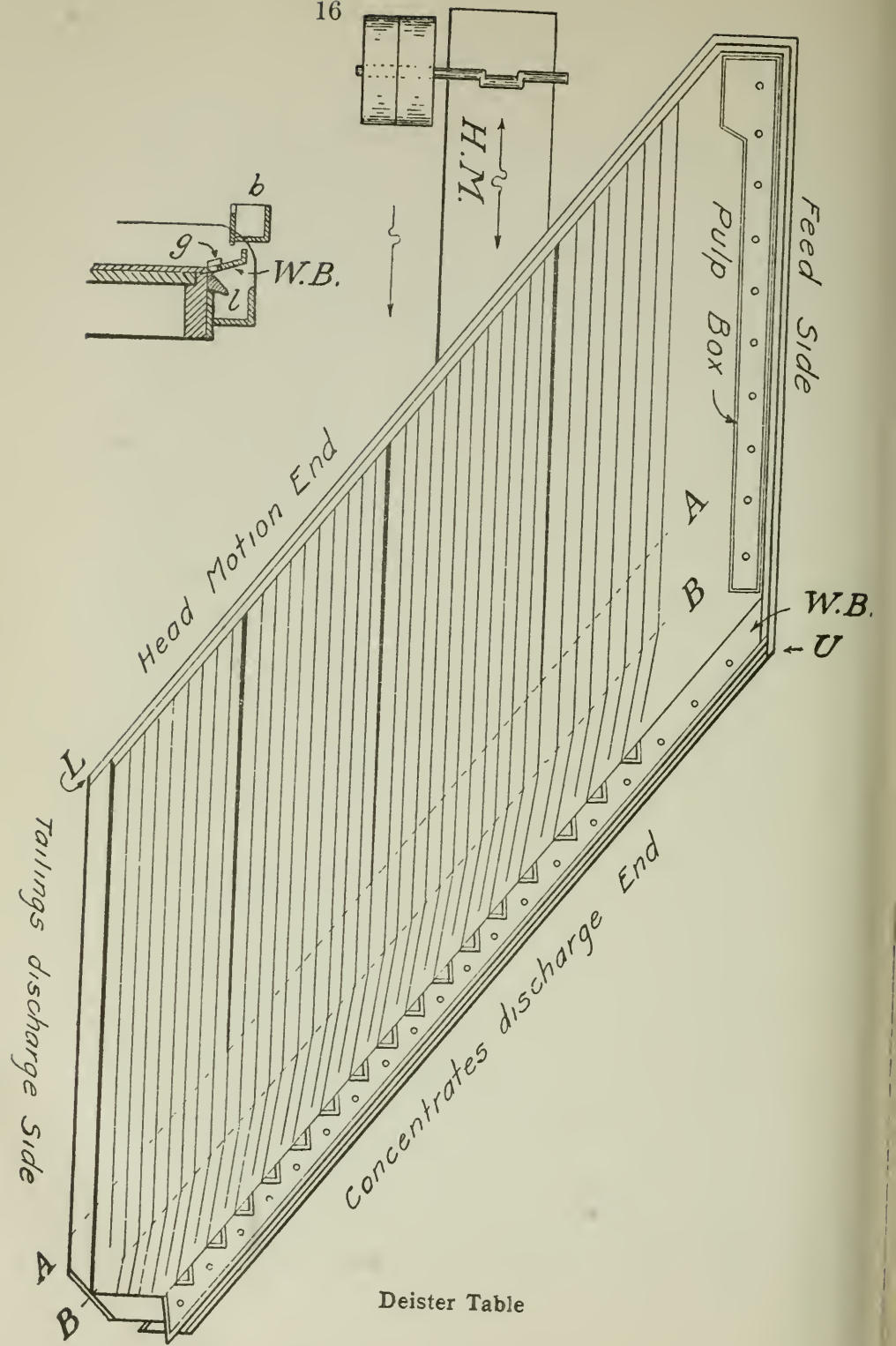
improvements and invention so patented to the said A. R. Wilfley."

That limits the issue as absolutely as words can do it to a pure question of form. So that form is not immaterial here, but fundamental. The decisions referred to by the court are inapplicable to this case.

Our seventh assignment of error is that the court erred in its failure to recognize principles embodied in the Deister table which impart novelty and value to it and distinguish it clearly from the Wilfley table; and the eighth is that the court failed to recognize the advance in the art embodied in the Deister table, and the legal consequences resulting therefrom. It will be convenient to consider these together. On page 238 of the record there is a drawing of the Deister table, on pages 240, 241 and 242 there is a description of the table and its operation. On the basis of that description we will call attention to those features of the table which are most important in this discussion. The drawing on page 16 is a reproduction of the drawing in the record; and for facility of comparison we also insert a reproduction of Figure 3 of the Wilfley patent. The general features of the Deister table are manifest at a glance—its rhomboidal form and the location of its riffles across the narrower dimension. These present two important peculiarities. The first is that four of them, denoted by heavy tapering lines, are higher than the others and slope from head to tip as indicated by the taper of the lines. These high riffles divide the others into four groups. The groups are of uniform elevation to the line AA where

all the riffles are equal in elevation. At that line there is an offset or step-down of 1/16 of an inch from which point the same elevation continues to the line BB where there is another step-down which brings the riffles to an elevation of 1/32 of an inch, at which they continue to their terminals. The reciprocating movement is denoted by the projecting piece H. M. which is a part of the machinery projecting from under the table. It is called the "head motion." It is the moving part of the mechanism which imparts the reciprocating movement to the table. The two headed arrow indicates that the movement is a to and fro oscillation and the single headed arrow indicates the direction of the resulting impulse on the material between the riffles. One would think that the words "end" and "side" should be reversed in their application. But mine men and draughtsmen have a habit of calling those parts of a table where the riffles originate and terminate ends whether the distance between them is the longer or shorter dimension of the table.

At the concentrates discharge end of the table there is a part called the washboard which fits snugly against the floor of the table and has a sharp slope toward the table surface. The construction, location and function of the washboard is best shown in the little drawing at the upper left-hand part of the page. It is there denoted by the letters W. B. and slopes down to the edge of the body of the table where the floor and its linoleum covering are seen under the letter *g*. Above the washboard is a waterbox which is kept filled and from which water runs out through a notch



Deister Table

(No Model.) 2 Sheets—Sheet 2.

A. R. WILFLEY.

ORE CONCENTRATOR.

No. 590,675 Patented Sept. 28, 1897

FIG. 3.

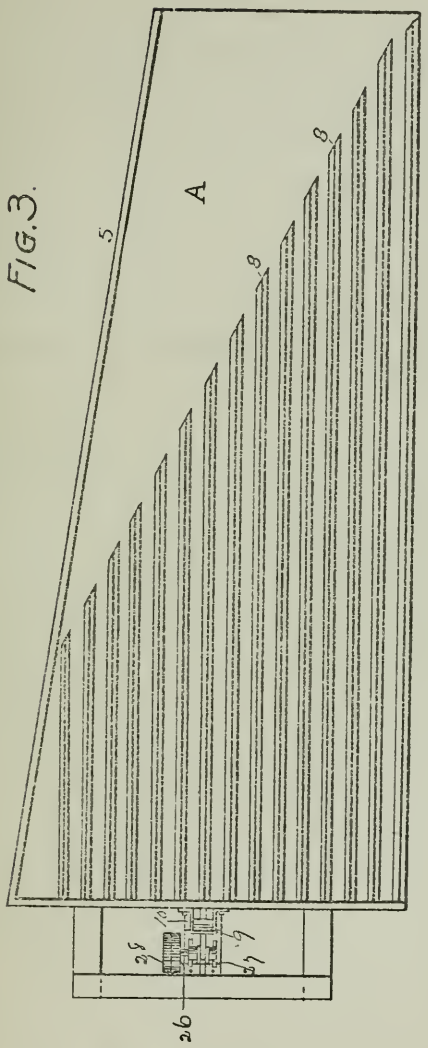
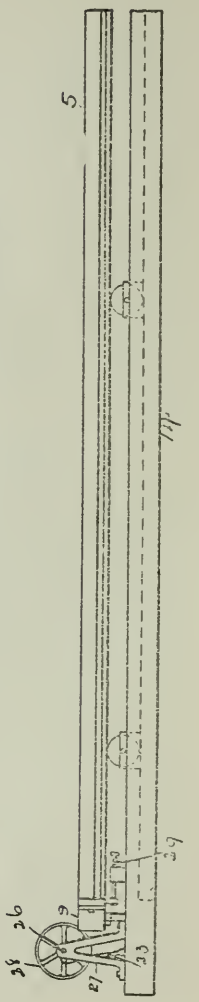


FIG. 4.



Witnesses
Edith Hinsworth

Inventor
A. R. Wilfley
By his Attorney

in its side, so as to keep the surface of the washboard covered all the time with a thin film of flowing water. At *g* is an aperture through the washboard with a V-shaped guard above it which prevents water flowing across the washboard from escaping through the aperture. At *l* is a concentrates trough or box extending along the concentrates discharge end of the table into which the concentrates are conducted by a spout. The washboard is shown on the main drawing at W. B. The minute circles show where water falls on it from the box *b* and along the lower edge of it are shown the V-shaped guards which prevent the water from flowing through the apertures in the angles of the guards.

To return now to the surface of the table, it will be seen that across the space or zone between the line BB and the concentrates discharge, the riffles are deflected slightly toward the foot of the table and that every alternating riffle is a little shorter (about two inches) than the one next above it. Here comes in the function of the washboard. By the time the material under treatment reaches the three cornered spaces all the coarse sand has been removed and there remains only a residue of fine sand to be washed out. This is done by the water flowing down the washboard as we have described. This is the way the washing-up process is performed on the Deister table. As will be seen, the lower one of each pair of riffles registers with the opening in the washboard in the angle of a V-shaped guard, so that the concentrates

which came by that pair of riffle troughs pass through a single aperture into the concentrates box.

At the feed side is shown the pulp box. This is raised slightly above the surface of the table, so that pulp flowing through the holes which are shown in it will spread over the unriffled space adjacent to the feed side. The pulp is fed from a spout discharging into the enlarged portion of the pulp box. With the assistance of the vibratory motion of the table the pulp tends to flow along the pulp box and out through the holes in it and spread over the unriffled surface below it. The table slopes generally from the feed side to the tailings discharge side, so that the pulp travels across the riffles leaving its valuable grains of metal between them as it goes until it falls off at the tailings discharge side as waste.

But this general declivity of surface is qualified by minor inequalities of elevation which play an important part in the operation of the table. When in operation the corner U is the highest point on the table, and the corner L the lowest. From its head motion end to its concentrates discharge end the whole table has a slight slope upward. The vibratory movement causes the particles of metal to creep across the table along the riffle troughs. It would appear from this that the metallic particles are driven uphill as they creep along the riffle troughs, which is the fact, and an important fact, as we shall see.

We can now picture to ourselves the action of the table in operation. It is covered with pulp flowing across the riffles from the pulp box to the tailings

discharge with a sort of tremulus movement caused by the vibrations of the table. As it goes the heavy particles of metal gravitate to the bottoms of the riffle troughs until, when it reaches the tailings discharge, they have all dropped out, and under the impelling force of the vibrating movement are creeping along the riffle troughs toward the concentrates discharge end. This is a continuous process going on hour after hour all day long.

But there other features of construction to be attended to which improve it still further. The high riffles have a utility not yet mentioned. They form dams across the table, above which pools are created which flood the riffles above them for some distance —something like half way to the next high riffle above. In these pools the particles of metal have a little more time to settle than they would have if the high riffles were not there. As they pass out of them they are pushed along the riffle troughs by the vibratory movements toward the concentrates discharge.

The water which comes from the washboard serves also another useful function besides the final washing up of the concentrates. It has been stated that when the table is in operation the corner U is the highest point on it, and the corner L the lowest. From this fact, water flowing over the table will tend to cross the riffles nearly at right angles to them. This applies to all the water coming from the washboard. The water, in the first place, replenishes the pools formed above the high riffles, and in the diluted fluid thus produced the metallic particles settle more readily

to the bottoms of the troughs, to be pushed on along them, as heretofore described. In the next place, that flow of water across the comparatively low riffles in the zones between the lines AA and BB, and BB and the concentrates discharge outlets operates to wash the sand remaining in them at the last minute down to the tailings discharge.

The Deister table came into the field long after the issue of the Wilfley patent, and is claimed to represent a large advance in the art. At the time this suit was begun it had not been patented. The court will want to understand its construction and operation as perfectly as possible. We will add to the general description just given a reference to three points which are specifically deserving of notice. The first of these is the high riffles already mentioned. The function which they perform of creating pools above them which flood the riffles about half way to the next riffle above is a unique and valuable feature of the table. It is by a process of stratification that all concentrating tables work. If the mineral would not settle in the bottom of the riffle trough it might flow over a hundred of them and come off at the foot in the same condition in which it started. This stratification is greatly accelerated by dilution. If a man would put a pint of pulp and two quarts of water in a pan and shake it a few minutes with his hands, then pour off the top and put in more water, he would by and by have the mineral in the bottom of the pan. This is the method by which the forty-niners gathered gold from the sands and gravel in California. The modern

ore concentrator is only an evolution from the forty-niner's pan.

The pulp flowing down the Deister table stops only for an instant in the pools above the high riffles. But for that instant the process of stratification goes on more rapidly than it would go if the pool were not there. In its passage from the head to the foot of the table it crosses about sixteen of these riffle trough pools. This dilution in connection with the jarring produced by the reciprocating movement with its 250 vibrations per minute makes the mineral particles tumble down fast. There are no such pools as these on the Wilfley table.

In the next place it will be observed that on the Deister table the riffles in the division above the first high riffle are further apart than those in the divisions below it. They are also higher. When the pulp first emerges upon the table from the feed box it is rich in mineral. It begins to stratify at once, and concentration goes on rapidly. The fine particles of mineral cannot climb over the high riffles, but the coarser grains of sand can. The riffles in that group are specially adapted to the condition of the pulp at its first entrance on the table. The pulp which goes over the first high riffle to be concentrated in the second group is comparatively poor stuff; that which reaches the third group poorer yet, and that which crosses the fourth group is poverty stricken.

Finally, a word further in relation to the low riffles in the zone between the line BB and the concentrates discharge. By the time the material reaches that

zone the coarse sand has all gone over the riffles and down to the tailings discharge. But there remains a residue of very fine sand which it is difficult to separate from the mineral. It will go over riffles if they are low enough, but they must be very low. The mineral particles mixed with it will also go over the riffles if they are low enough. The problem is to provide riffles low enough to let the fine sand go over, and at the same time high enough to keep the concentrates back. Mr. Deister found that as a rule one thirty-second of an inch would meet those conditions. But there is no magic in that exact figure. They might be a sixty-fourth of an inch higher and work well. And with pulp of relatively coarse quality a sixteenth of an inch will be best.

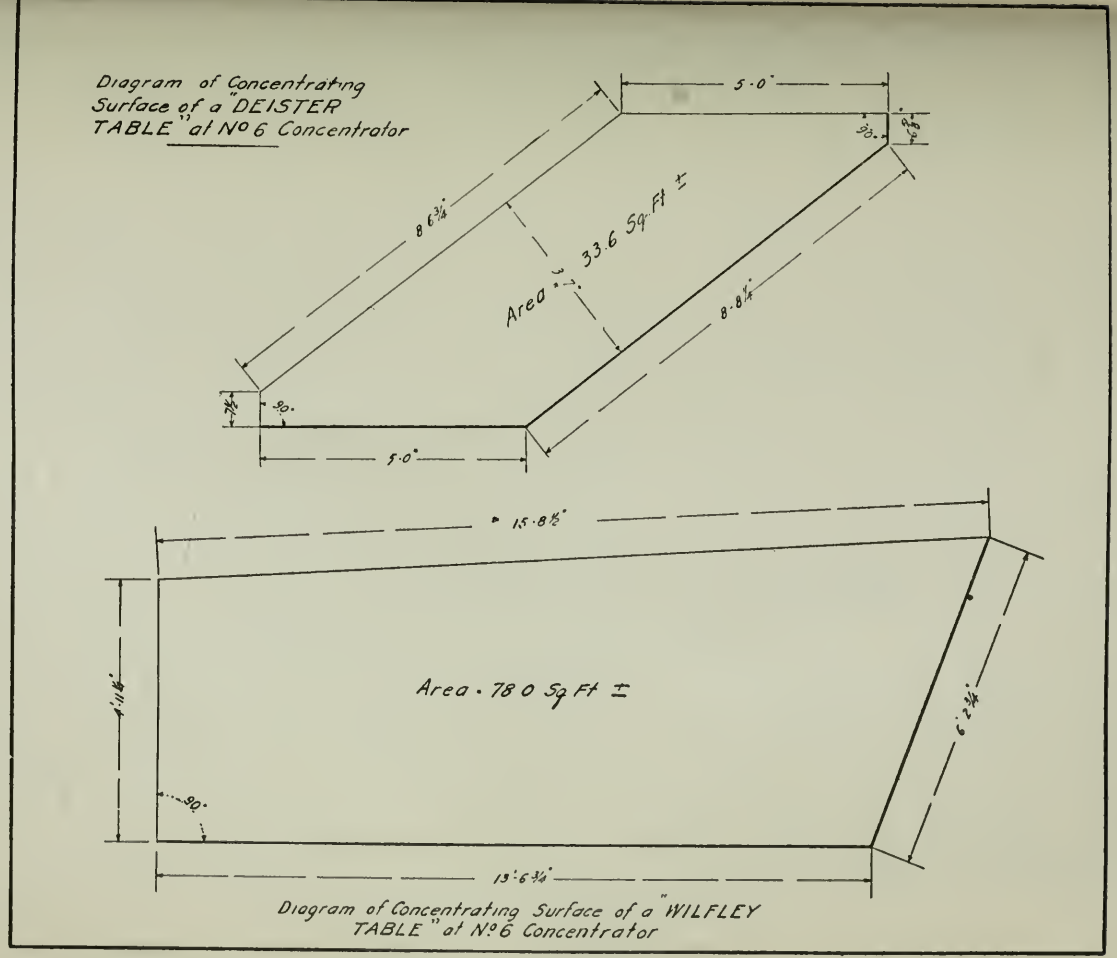
The deflection of the low riffles is for this purpose: In that zone the material is subject to two forces acting in different directions—one the force of the reciprocating movement, which tends to impel the material straight on to the concentrates discharge; the other the force of gravity and the flow of the water coming from the washboard which tend to carry the material down toward the foot of the table. The resultant of these forces is along a slightly deflected line across the zone between the line BB and the concentrates discharge. And so by accommodating the riffles in that zone to that line it becomes a little easier to let the sand over and hold the concentrates back. This feature is the last refinement of construction in the most highly developed table in the art at the time it came out, every square inch of which does perfect work. But the

deflected position of the low riffles is not a fundamental, nor even an important feature of the table. The riffles could keep straight on to the concentrates discharge without substantial change in the operation of the table.

What is invention? *The adaptation of means to ends.*

The Deister table exhibits invention of a high order. No candid man can deny that. It shows an advance in the art over Wilfley. No candid man can deny that, either. That was only what was to be expected. The Wilfley patent was 12 years old when the Deister table was put into the concentrating mills of the appellants at Morenci, Arizona. That was its first appearance—before it was patented. Was it not to be expected that there would be some advance in the art in that interval? It was. It would have been strange if it had not been so. Every square inch of the surface of the Deister table bears the stamp of invention. Its combination of high and low riffles; its pools above the high riffles; its scheme for washing up in little subdivided spaces; its water supply coming in a thin film over the washboard, which is all the water supplied to the table; by all which means taken together every square inch of its surface does useful work. All these did not happen by chance. They are the product of invention.

The operation of the table proves it. On page 246 of the record there is a condensed statement of the testimony of Gustavus E. Hunt, who was the superintendent of the concentrating mills of the Detroit Copper Mining Company and who had in use 38 Wilfley


Diagram of Concentrating
Surface of a "DEISTER
TABLE" at No 6 Concentrator
5·0"
8 6 3/4"
Area = 33.6 Sq Ft ±
8·8 1/2"
2 1/2"
90°
5·0"
15·8 1/2"
4'·11 1/2"
Area · 78 0 Sq Ft ±
6'·2 3/4"
90°
19'·6 3/4"
Diagram of Concentrating Surface of a "WILFLEY
TABLE" at No 6 Concentrator

tables in that mill with a number of Deister tables and who had good opportunity to compare the work of the two tables. He produced two drawings showing the comparative areas of their concentrating surfaces. These drawings so put in evidence are now in the hands of the clerk as an exhibit, as appears on page 253 of the record. We insert a reproduction of these drawings here. They show an area of 33.6 sq. ft. of concentrating surface on the deck of the Deister table against 78 sq. ft. on the Wilfley—a good deal less than half. And yet, as Mr. Hunt testifies, the Deister table would handle as much material as the Wilfley.

This is important. These tables are always used in great concentrating mills where they are under roof, and dozens, scores, or hundreds of them are gathered in one building. A table that will do the same work in one-half the space is an enormous gain.

Not only the same amount of work as the smaller tables, but more effectively. On page 246 of the record John Kiddie testifies that in January, 1909, he made a comparative test of a Wilfley and a Deister machine under the direction of Mr. Carmichael, the general manager of the Arizona Copper Company. He details at length the method employed to secure fairness and accuracy in the test. It extended over 12 days. He produced a tabulated record of the test which is on file among the exhibits, as appears on page 253 of the record. We reproduce that table here. It will take a little study to realize its full significance. In the first column are the dates of the

Date	Machine	Hrs Run	Tons Feed per 24 hours	Pounds Dry Concentrates	Assay of Concentrates	Pounds Copper in Concentrates	% Relative Saving in Terms of Wilfley	Approx Extraction	Assay of Heads	Assay of Tails	% Solids in Feed	Stroke in Ins.	RPM	Table
1/16/09	Deister	2½	12.24	297¾	17.28	51.45	115.1	67.6	2.86	1.03		¾	280	¾"
"	Wilfley	"		249½	17.89	44.63	100.0	60.0	2.86	1.24		1	262	
1/17/09	Deister	2	12.52	211	17.93	37.83	108.3	61.4	2.89	1.24	3.18	1 3/16	283	¾"
"	Wilfley	"		210	16.63	34.92	100.0	57.0		1.38		1		
1/18/09	Deister	2	9.94	255	13.03	33.23	119.2	78.0	2.62	0.83	2.49	1 3/16	280	1"
"	Wilfley	"		208¾	13.35	27.87	100.0	68.0		0.97		1		
1/19/09	Deister	2	12.69	302¾	16.25	49.20	118.5	70.0	3.22	1.12	2.84	1 3/16	288	1¼"
"	Wilfley	"		262¼	15.82	41.49	100.0	63.0		1.37		1		
1/20/09	Deister	2	13.17	354	16.00	56.64	121.5	70.5	3.51	1.23	2.74	1 3/16	281	¾"
"	Wilfley	"		310	15.03	46.59	100.0	63.3		1.51		1		
1/21/09	Deister	2	8.52	260¼	12.70	33.02	120.8	74.2	2.90	0.83	2.90	1 3/16	281	¾"
"	Wilfley	"		212¼	12.87	27.35	100.0	67.6		1.11		1		
4/22/09	Deister	2	16.33	298	11.62	34.63	117.6	59.0	2.13	0.98	2.75	1 3/16		¾"
"	Wilfley	"		231	12.74	29.43	100.0	51.5		1.13		1		
1/23/09	Deister	2	13.20	288	15.80	45.50	106.0	69.3	2.97	1.05	2.54	¾	283	1"
"	Wilfley	"	13.46	248	17.30	42.90	100.0	64.5		1.19		1		
1/24/09	Deister	1½	38.65	357	13.10	46.70	117.9	44.7	2.12	1.26	3.24	1 3/16	281	1¼"
"	Wilfley	"		260	14.20	39.60	100.0	36.5		1.42		1		
2/1/09	Deister	2	19.84	343	12.60	43.22	111.0	61.1	2.10	0.91	1.62	1 3/16	281	1⅛"
"	Wilfley	2		315½	12.30	38.81	100.0	57.1		1.00		1¼		
2/2/09	Deister	2	17.65	299½	15.57	46.63	110.0	61.8	2.56	1.09	1.66	1 3/16	280	1⅛"
"	Wilfley	"		288½	14.66	42.29	100.0	56.3		1.24		1¼		
2/3/09	Deister	1½	25.50	268	12.74	34.14	136.6	52.1	1.99	1.04	2.35	1 3/16		1⅛"
"	Wilfley	"		195½	11.12	21.74	100.0	35.5		1.37		7/8		
1/26/09	Deister	2	9.37	244	11.50	28.06	100.7	68.5	2.56	0.95	2.19	¾	287	2"
"	Vanner	"		169	16.50	27.88	100.0	67.5		0.93		1	210	

Run of 1/24/09 - Measuring on Linolium, discharge end of Deister Table was ½" Lower than Feed end
" " 1/26/09 - " " " " " " " ½" Higher "

Direct Average of Tailings
" " Concentrates

Deister Table
1.05 %
14.55 %

Wilfley Table
1.24 %
14.49 %

Table

Forward end of high Riffles removed

6.1 20 - 4.15 40 - 13.7 60 - 6.5 80 - 4.5 100 - 6.8 200 20.9 - % Wt
0.83 1.23 2.64 4.39 6.25 8.06 3.52 - % Cu

7.0 20 - 30.6 40 - 10.4 60 - 9.5 100 - 7.4 200 35.1 % Wt
1.54 1.45 2.04 2.90 4.25 2.08 - % Cu

Feed - Spigot of Cone hydr. Class

16.2 20 - 41.9 40 - 8.9 60 - 3.6 80 - 3.9 100 - 4.8 200 21.9 - % Wt.
1.14 1.35 2.99 3.12 3.90 5.00 3.00 - % Cu.

5.6 20 - 28.5 40 - 10.5 60 - 10.9 100 - 10.5 200 34.0 - % Wt.
1.10 1.01 1.79 3.52 5.32 2.78 - % Cu

daily tests. Opposite these dates are the results of the tests for that day under appropriate columns. The figures in the column headed "Pounds of dry concentrates" furnish the first basis of comparison. Running down this column it will be seen that the Deister table is way ahead every time. All other points of comparison, however, are merged in the column headed "Savings in terms of Wilfley." In that column the total saving of copper from the pulp fed to the Wilfley machine is represented arbitrarily by 100, and the total saving by the Deister machine stated in the form of a per cent. upon 100. This furnishes a perfect basis of comparison. If in any run the saving made by the Deister table were exactly equal to that made by the Wilfley it will be denoted by 100. If less, by a minus figure, as—10; if more, by a figure above 100. The Deister figures in the column are all more than 100. That means that the Deister table made a greater saving than the Wilfley every time. They show an average of approximately 116. That is, the Deister table extracted nearly 1/6 more copper from the same pulp.

This is a wonderful showing. That the smaller table should not only do as much work as the larger one, but do it so much better as to get 16 per cent more value out of the same pulp caps the climax. There is a reason for it. It is the invention embodied in the table—the wise adaptation of means to ends; the new arrangement of riffles; the combination of high and low riffles; the new way of washing-up in minute areas instead of *en masse* with the whole output

of the table on one big space. *And all this is absolutely uncontradicted.* Counsel for the plaintiff were present when the witnesses were examined and cross-examined them. They were offered opportunity to verify all the tests, but declined to do it. *Are we not justified beyond all cavil in our claim that the Deister table embodies new invention and represents an advance in the art over its senior competitor* 12 *years older?*

This Court has decided that the claims of the Wilfley patent cover the Deister table. We have offered our arguments against that construction. But for what is to follow we admit it to be correct. We have then, the case of a patent whose claims in words cover a later structure embodying a new invention—the result of subsequent progress in the art. This brings the case within the purview of the decision of the Supreme Court in *Westinghouse* v. *Boyden Power Brake Co.,* 170 U. S., 537. This was a suit for infringement of claims 1, 2 and 4 of patent 360,070 to George Westinghouse, March 29, 1887, for improvement in air brakes. It was heard originally by the Circuit Court for the District of Maryland, which found for the defendant. 66 Fed., 997. Appeal was taken to the Circuit Court of Appeals for the Fourth Circuit, where the judgment of the District Court was affirmed as to claims 1 and 4, and reversed as to claim 2. 70 Fed., 816. From this judgment both parties applied for a writ of *certiorari* to the Supreme Court, which was granted.

The case is a great one. It deals with many ques-

tions. The invention involved related to an art second to none in its importance to mankind—the control of railway trains. It was conceded that Mr. Westinghouse was the pioneer in air brakes. As such the court on page 562, rank him with Howe of the sewing machine, Morse of the electric telegraph, and Bell of the telephone. But his pioneer patent had expired. He had taken out numerous patents for improvements, as also had a competitor, Geo. A. Boyden, who had made what the court regarded as a highly meritorious improvement. Comparing the Westinghouse and Boyden improvements, the court said this on pages 572-3 of the report:

> "The underlying distinction between the two devices is that in one, a separate valve and separate by-passage are provided for the train-pipe air, while in the other, the patentee has taken the old triple (or quadruple) valve, and by a slight change in the functions of two of its valves and the incorporation of a new element (partition 9), has made a more perfect brake than the one described in the Westinghouse patent. If the credit be due to Mr. Westinghouse for having invented the function, Mr. Boyden has certainly exhibited great ingenuity in the discovery of a new and more perfect method of performing such function. If his patent be compared with the later Westinghouse patent No. 376,837, which appears to have been the first completely successful one, the difference between the two, both in form and principle, becomes still more apparent, and the greater simplicity of the Boyden patent certainly entitles it to a favorable consideration. + + + Under such circumstances, the law entitles him to the rights of an independent inventor."

The principle which we wish to apply here, and for the sake of which we cite the case, is stated thus on page 568:

> "But even if it be conceded that the Boyden device corresponds with the letter of the Westinghouse claims, that does not settle the question of infringement. We have repeatedly held that a charge of infringement is sometimes made out, through the letter of the claims be avoided. *Machine* v. *Murphy,* 97 U. S., 120; *Ives* v. *Hamilton,* 92 U. S., 426, 431; *Morey* v. *Lockwood,* 8 Wall., 230; *Elizabeth* v. *Pavement Company,* 97 U. S., 126, 137; *Sessions* v. *Romadka,* 145 U. S., 29; *Hoyt* v. *Horne,* 145 U. S., 302. The converse is equally true. The patentee may bring the defendant within the letter of his claims, but if the latter has *so far changed the principle of the device* that the claims of the patent, literally construed, have ceased to represent his *actual invention,* he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent."

This decision has been followed by others to the same effect since, to some of which we beg leave to refer.

Norton v. *Wheaton,* 97 Fed., 636 (Northern Dist. Cal., 1899), was a suit on a patent for improvements in can-ending machines. The court said, on page 641:

> "In *Westinghouse* v. *Brake Co.,* 170, U. S., 537, 568, the Supreme Court, had before it the question of infringement involved in the mechanism for opening and closing certain valves in automatic air brakes. It was con-

tended on the part of the complainant in that case that he was a pioneer inventor, and that the alleged infringing device corresponded to the very letter of the claims of the complainant's patent; but it was held that even this fact was not sufficient to establish infringement. The court said':

" 'The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principles of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted when he has done nothing in conflict with its spirit and intent.' "

Standard Computing Scale Co. v. *Computing Scale Co.,* 126 Fed., 639 (C. C. A., Sixth Circuit, 1903), was a suit for infringement of a number of patents for improvements in "weighing and price scales." The following is from the opinion, page 649:

"Unless we attribute to the Culmer patent a scope so wide as to include all means of affecting flexibility between the beams, the applicant does not infringe, for it would be difficult to conceive things more unlike. It may be true that the appellant's structure would meet in a general way the calls of the first claim of the Culmer patent; but, if so, it is a capital illustration of the truth of what was said by Mr. Justice BROWN in delivering the opinion of the Supreme Court in *Westinghouse* v. *Boyden Power Brake Co.,* 170 U. S., at page 568, when he said:

Then follows the extract from the Westinghouse case just quoted. The court found for the defendant.

Severy Process Co. v. *Harper & Bros.,* 113 Fed., 581, 584 (S. Dist. New Jersey, 1902). Patent for improvement in platens for printing presses. Cites *Westinghouse* v. *Boyden Power Brake Co.,* and states the principle in these words, on page 584:

> "Claims should not be so broadened by construction as to include devices which, though accomplishing the same function, do so by new combinations operating upon principles so different as to entitle their originator to be considered as an independent inventor."

Gen. Elec. Co. v. *Allis-Chalmers Co.,* 171 Fed., 666 (C. C. N. J., 1909), was for infringement of a patent for "attachment for notched quadrants," which are devices used in the operation of electric motors. It was held that the patent was not infringed. The court refers to the Westinghouse case in these words, on page 669:

> "The complainant's invention was not broadly new; it did, however, make some advance upon the art, and is entitled to a reasonable but restricted application of the doctrine of equivalents. It will be observed that the claim in issue is very broad, broad enough indeed to embrace any and all means of supporting the latch, no matter whether the means were new or old, or within, or without, the range of equivalents. The fact, however, that the defendant's device may be within the language of the claim does not of itself prove that it is an infringement. Infringement is not a mere matter of words."

The finding was for the defendant.

> "In *Westinghouse* v. *Boyden,* 170 U. S., 537, at page 568, Mr. Justice Brown, in delivering the opinion of the court, said:"

quoting the same paragraph above.

In the same case on appeal in *Gen. Elec. Co.* v. *Allis-Chalmers Co.,* 178 Fed., 273, the Court of Appeals, 3rd Cir., affirmed the judgment below with this remark at the close of the opinion on page 276:

> "The mere fact that the defendant's device may be within the letter of the claim sued on is not conclusive proof of infringement. This is shown in the opinion of Judge Cross in the Court below (171 Fed., 666). We concur in the conclusion expressed by him in that opinion."

American Stoker Co. v. *Underfeed Stoker Co. of America,* 182 Fed., 642 (Cir. Ct. W. Dist. Pa., 1910). The suit was on a patent to James Garden for mechanical furnace stoker. After a discussion of the prior art and the construction of the devices employed by the parties respectively, the court said, on page 653:

> "We have then an entirely different furnace from the one described by Garden. It is true dead-plates are used, and that the result of their use is that the furnace becomes sealed and the gas does not flow down or the air escape upwards from the air box; but the new function which the defendant seeks to accomplish is by the use of the entire space underneath as a reservoir. I cannot avoid the conclusion that this was not an infringement of complainant's patent.
>
> "I am of the opinion that the case of *Westinghouse* v. *Boyden Power Brake Co.,*

170 U. S., 537, 568, is authority for this conclusion. The court there said:

> " 'The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent.' "

The finding was for the defendant.

Here is another chain of cases, beginning with *Westinghouse* v. *Boyden Power Brake Co.,* 170 U. S., 537, decided in 1898, and running down to 182 Fed., decided in 1910, in every one of which cases the Westinghouse case is followed, and these words quoted or expressly referred to, from page 568 of the report.

These decisions apply in this case with peculiar force. The patent in suit is an old one. It was an old one when this suit was begun. It was issued Sept. 28, 1897. The bill was filed Feb. 24, 1910. The patent was then over twelve years old. In the meantime the art had been developing. New ore concentrators had come into the field. The Deister was one of them. The words of Justice Brown in the Westinghouse case fit here as perfectly as there. He said, "by slight change in the functions of two of its valves and the incorporation of a new element he (Boyden) has made a more perfect brake than the one described in the Westinghouse patent." So Deister by the

ingenious construction of his table which we have described, made a more perfect table than the Wilfley, as its operation demonstrated.

At page 353 of the record is a patent to J. Lampert for an ore concentrator dated June 29, 1895, which is in our opinion a complete answer to the claim of infringement of the Wilfley patent by the Deister table. It contains only one page of drawings of which we insert a reproduction here. It will be convenient to study Fig. 2 first. It will be seen that, while the outside frame is rectangular, the riffled surface is rhomboidal, exactly like the Deister. The pulp box *A'* at the left discharges pulp upon the head of the table as in the Deister. The pulp flows down to the foot leaving its mineral particles in the spaces between the riffles and the gangue going off at the foot as on the Deister. In the meantime a reciprocating movement communicated by the shaft *F* having cams *f f* at its ends connected with the table by straps *G G* pushes the mineral particles along the riffle troughs to the concentrates discharge at the side of the table, just as in the Deister. These movements of the material are shown by arrows on the face of the drawing. The full, feathered arrows indicate the path of the pulp from the pulp box *A'* to the foot of the table, while the short, tailless arrows indicate the course taken by the mineral particles as they turn toward the concentrates discharge under the influence of the reciprocating movement. All this is exactly like the Deister.

The concentrates are washed up just as they are leaving the table by a spray from a perforated pipe *H*

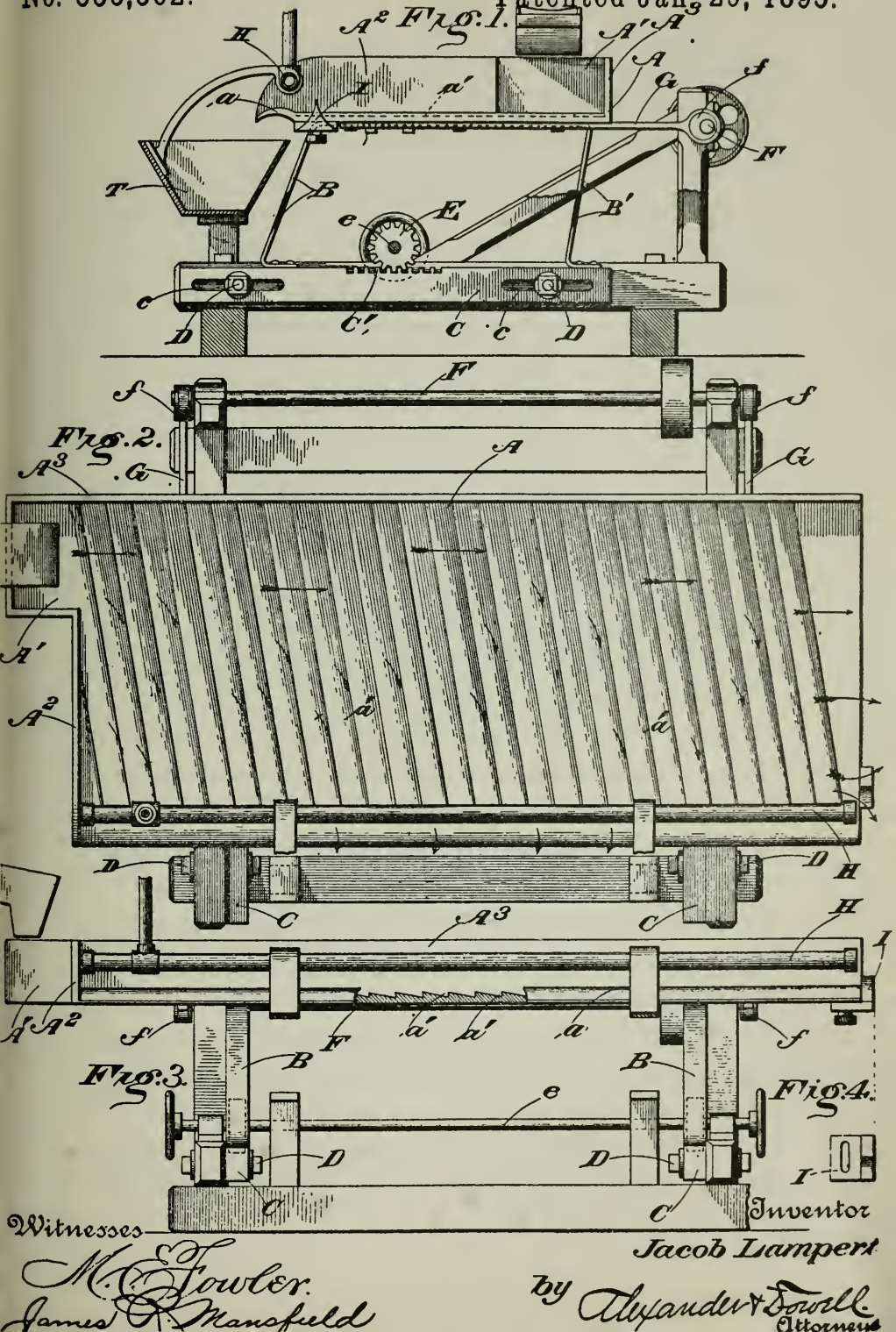
(No Model.)

J. LAMPERT.

CONCENTRATOR.

37

No. 533,362. Patented Jan. 29, 1895.



Witnesses
M. C. Fowler.
James R. Mansfield

Inventor
Jacob Lampert
by Alexander & Dowell
Attorneys

seen at the concentrates discharge edge of the riffled surface. This spray does the work of the washboard in the Deister table, and is its full equivalent.

In Fig. 1, at the top, is shown the washing-up device in cross section. *T* is the concentrates box. At *a'* are shown the riffles in cross-section. At *a* is a slight elevation in the floor of the table over which the concentrates pass in leaving it. Just above that elevation is the perforated pipe *H* which we saw at *H* in Fig. 2 and which delivers a continual spray on the concentrates as they leave the table. The patentee calls this part a "bead or flange," which is a curious name to apply to it. But the drawing shows what it is, and it can be made as flat and wide as may be desired.

As a whole, the Lampert table is inferior to the Deister. That is to be expected. It was 14 years earlier in the art. But in its general features the resemblance is close. It has the same rhomboidal working surface; the same transverse arrangement of riffles; the same flow of pulp from head to foot; the same discharge of gangue at the foot; the same reciprocating movement; the same delivery of concentrates along the riffle terminals; the same washing-up process as the concentrates leave the table. So far from being an imitation of Wilfley the Deister table harks back to the prior art.

There are some observations near the close of the opinion that we are not sure we understand. In the last paragraph of page 8 this is said:

> "The riffles in the Deister table, used by the appellants, differ from those of the Wilfley

> table in that each alternate riffle terminates with minute and slightly deflected ends which have an elevation of but one thirty-second of an inch, so that at the conclusion of the separation, the material is discharged into the open spaces between them."

And in the first paragraph of the next page:

> "We are of the opinion that the use of these deflected terminals so greatly reduced in elevation does not serve to differentiate the Deister table from that of the patent in suit, whether the space covered by them be regarded as substantially a smooth surface, as was held in *Wilfley* v. *Denver Engineering Works Co. et al,* 111 Fed., 760., and in *Mine & Smelter Supply Co.* v. *Braeckel Concentrator Co.,* 197 Fed. 897, or whether they be regarded as a continuation of the riffles."

Does this mean that the court regards a riffle only one thirty-second of an inch high as not a riffle at all, and a space covered with them as in effect a smooth space; or that the space between the low, deflected riffles serves no function of concentration? The words "so that at the conclusion of the separation, the material is discharged into the open spaces between them" would seem to import that the court was assuming that the separation was complete before the material entered the spaces between the low, deflected riffles. That was the view propoundedby Mr. Hodges, expert for the plaintiff in the District Court. He gave his deposition (which occupied a good many days) in Washington city. It appeared on cross-examination that he had never seen a Deister table at work and had given his opinions upon the basis of his own

inner consciousness. We then adjourned the examination to Morenci, where the tables were at work and investigated the subject on the ground. We found that when a Deister table was in operation sand could be seen with the naked eye passing over the low, deflected riffles all the time. That proved that concentration was going on. We put on six witnesses, each one of whom testified that he had observed the table at work and had seen sand pass over those riffles. They were Gilbert H. Davidson, W. A. Moore, Rudolph Gahl, Geo. Nord, Earl Schuyler and Gustavus E. Hunt. Their testimony is on pages 244-5 and 6 of the record, and is brief, and we ask the court to read it there without quotation here.

One at least of the witnesses speaks of seeing sand *and concentrates* passing over the riffles. That would necessarily be so. It would not be possible to make a clean-cut separation between sand and concentrates in passing over one riffle. In all concentration by passing over riffles the process is progressive. In crossing each riffle trough the material drops some of its mineral particles, while the remainder goes over with the sand. By the repetition of this process frequently enough the mineral is extracted little by little and the sand passed on down as waste. The operation is precisely like that which takes place in the passage of pulp across the higher riffles, only on an extremely small scale. By the time the material reaches the lowest riffles only the finest sand remains. It has to be coaxed over the riffles by a nice adjustment of height—low enough to let the sand go over,

and high enough to hold the concentrates back. It appeared to us, however, that the problem was one which would admit of a more certain solution than that to be obtained by observations with the naked eye. Those low, deflected riffles are about 13 inches long. If concentration goes on in the trough between them the material as it leaves them must be richer in mineral than when it enters them. So we asked Mr. John Kiddie, the most skillful expert in such things we ever met, to devise some way of testing that question, which he did. His testimony is on pages 243 and 4 of the record and his report of the test with a blue print drawing illustrating the method employed and the two metalic scoops he used are on file among the exhibits in the hands of the clerk, as appears on page 256 of the record, being the three first items of the list. We have reproduced the blue print drawing and insert it here, with a copy of Mr. Kiddie's description of the method employed in making the test. This is his testimony.

> "In order to show that concentration was going on along the terminal riffles, the following method was employed. Two small scoops of thin sheet copper were made, wide enough to fit between two of these riffles, with their edges filed sharp. These scoops were longer than they were wide and provided with a suitable handle. Two jets of water were arranged by means of flexible rubber tubing provided with two pointed glass tips.
>
> "Two men, each with a scoop and a water jet, took the samples. The two scoops were placed simultaneously between the same two riffles, one near either end with their sharp

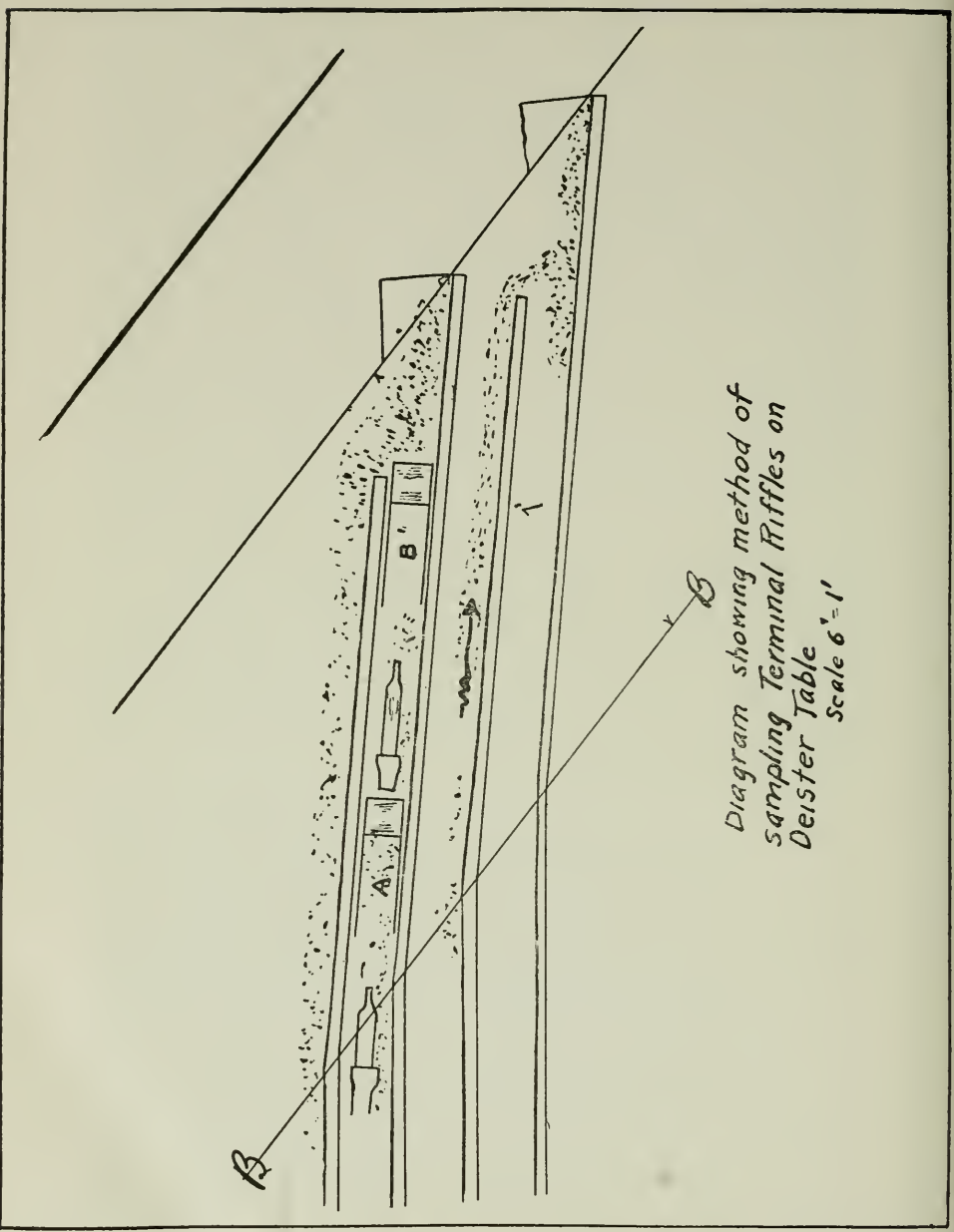


Diagram showing method of sampling Terminal Riffles on Deister Table
Scale 6" = 1'

edges against the surface of the table and their long axes parallel to the riffles. With the water jets the concentrates lying between the two riffles from $\frac{1}{2}''$ to $\frac{3}{4}''$ in front of the scoop, were washed into the scoop and caught. This operation took the fraction of a minute, when the scoops were removed and the table again allowed to resume its normal work.

"Three sets of samples were taken in this way. In the first set, marked (1), 12 samples were taken on the 8th riffle, and 12 samples on the 12th riffle, numbered from the top of the table (nearest the feed box). These two riffles were selected because it could be seen that a moderate amount of sand was continually being washed over them.

"In the second set of samples marked (2) they were taken at every fourth riffle, beginning at the bottom of the table and working up to the top. This was repeated four times.

"(3) represents 20 samples taken more or less at random from riffles where an excessive amount of sand was being washed over.

"Samples taken between the terminal riffles on one Deister table.

	Scoop A		Scoop B	
	% Cu.	% Ins.	% Cu.	% Ins.
(1)	12.44	59.26	20.60	32.68
(2)	18.42	37.26	24.76	16.16
(3)	22.42	21.70	28.22	7.00

"Before taking these samples, the table was set to throw the lines of concentrates approximately on the line following the end of the terminal riffles to the left of scoop A in the sketch.

"The above results show a very material amount of cleaning taking place between the two points at which samples were taken off.

> This is shown by the decrease in the percentage of insolubles in the concentrates with a corresponding increase in the percentage of copper, as they traveled along the terminal riffles toward the discharge point."

The painstaking thoroughness of this report is remarkable. It embraced the following samples:

12 From the 8th riffle on the table.
12 From the 12th riffle on the table.
36 From every 4th riffle from the bottom.
20 At random.
80 In all.

Taking these as a whole, they speak absolute truth as certainly as that commodity is attainable by human effort.

Counsel for the plaintiff never questioned the accuracy of this testimony. It demonstrates with absolute certainty that the work of concentration on the Deister table continues to the very ends of the riffles.

These observations show exactly what goes on in the low, deflected riffles of the Deister table and demonstrates with certainty that the active work of concentration is continued to their terminals. Upon the whole, the views expressed by the court on pages 8 and 9 which we have quoted above, are shown to be erroneous. A riffle is a riffle as long as it performs the work of a riffle though it be only one thirty-second of an inch high, and the open spaces between the low, deflected riffles are riffle troughs in a true sense.

The circumstance of the deflection of those riffles downward has no significance. They could extend straight on from the line *B B* to their terminals without any material change of operation or result. A little loss, it may be, in the last refinment of perfection of operation, but nothing more.

In the District Court the plaintiff relied on two grounds in support of its claim for a broad construction of the Wilfley patent. One was that the Wilfley table had been very extensively used. All the plaintiff's witnesses had a great deal to say about that. The other was that it embodied a novel principle of great value. The first of these will not count here because this court in its decision in *Hyde* v. *Minerals Separation* sat down hard upon this same claim made there. We quote from page 761 of the Mining Scientific Press in which the decision was published.

> "The decision of the court below appears to have been largely influenced by the consideration that the appellee's patent had gone into extensive and successful use. The fact that a patented device or process has gone into extensive and successful use is often of value in determining the question of invention and patentability. It is referred to for the purpose of turning the scales in cases of grave doubt. It is of no value whatever where the question of invention or patentability is free from doubt, and in any case its value depends largely upon the causes which produced it. It is often due to business ability in manufacturing, exploiting, and advertising, and to the fact that prior conditions have not stimulated development."

In this case the question of invention is not in

issue. The validity of the Wilfley patent is admitted and the sole defense is non-infringement. Hence the fact of extensive sales is wholly immaterial.

At the hearing in this case we obtained leave to file a brief in reply, which we did within the 10 days allowed. In that brief two points are urged which we wish to present again here. The first of these is that the patent is limited to a special form of riffle—to the metallic Z-bar riffle, which is not found on the Deister. We are not charged here with imitating the commercial Wilfley table, and if we were, we would not be liable. If we are liable at all it is for infringement of the patent. This is printed on page 299 of the record.

On sheet 1 of the drawings, in Figs. 5 and 7, are shown cross-section outlines of the riffles, (Rec. p. 299). On page 1 of the patent (Rec. p. 301) lines 32 to 40, there is this description of it.

> "Let the numeral 5 designate the table provided with longitudinal riffles 8, attached to its upper surface. These riffles are of unequal length and angular in cross section. The vertical or upwardly projecting part of the riffle is designated by the reference-character 8^a, and the upper part, which lies parallel with the bed of the table, is designated by the reference-character 8^c."

He then goes on to describe the position and varying lengths of the riffles, and then, in column 2, the mechanism for producing the reciprocating movement of the table. In column 1 of page 2, he describes the

washing up process which takes place on the smooth space *A* along the terminals of the progressively lengthening riffles. And then, in column 2 of page 2, he describes in detail the functions and operation of the angular riffles in these words:

> "The function of the angular riffles will now be described in detail.
>
> "The part 8^a of the riffles would be sufficient alone to catch the larger and heavier particles of mineral, but some of the more minute particles would be forced over the riffles and carried downward with the gangue and perhaps finally lost were it not for the part 8^c of the riffles, which checks this tendency and allows specific gravity to prevail, the same as in hand panning. It is well known that the finest particles of mineral can be saved by hand-panning. The specific gravity of the finest particle of gold is, of course, the same as the largest nugget, and if the proper conditions exist the minute particle can be saved as well as the nugget. The object of my angular riffles is to produce the conditions necessary to save not only the largest but also the finest mineral particles. Under ordinary conditions these fine particles when acted on by a current of water are carried along with the water, and consequently lost with the ganque. The upper part 8^c of my riffle checks the tendency of these light particles to pass over the riffles with the water. Hence they are confined by the bed of the table below the part 8^c of the riffles above, while the part 8^a of the riffles checks their downward movement. Hence under the influence of the table's movement or vibration the mineral particles, both fine and coarse, are caught by the riffles."

Right in the midst of this minute and specific description of his invention, in the last four lines of column 2, page 2, he makes this surprising statement:

> "While I prefer to employ the angular riffle shown and described in this application, I do not limit the invention to any special construction of riffle."

This must be regarded as a nullity. The Statute, Sec. 4888, R. S., requires the applicant to describe his invention in "full, clear, concise and exact terms," and in the case of a machine, as this is, to "explain the principle thereof and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions." This applicant did all that. He described his invention, including the angular riffles, in very full, clear, concise and exact terms, and explained the principle of their operation very minutely. Then he says he does not limit himself to any special construction of riffle. He might as well have made the same statement about any other part of his invention. He might as well, after describing his progressively lengthening riffles, have added that he did not limit himself to any length or arrangement of riffles. Such fast and loose use of words is not a compliance with the statute. It is either nugatory and void, or it invalidates the patent entirely for non-compliance with the law. We think it is fairer to take the former horn of the dilemma; to regard the patent as valid for the construction described and claimed in it, and the inconsistent reservation as a nullity. It follows necessarily that the Deister table does not infringe.

It is not uncommon in the exploitation of patented inventions to introduce new features of construction in the apparatus suggested by practical experience. They usually improve it for use. The tapering riffles were such a feature and were an improvement in the table for use, no doubt. But a suit for infringement must rest on the patent, and nothing infringes that does not embody the construction described and claimed in it.

The other point is that in an infringement case the burden of proof is on the plaintiff and that the charge of infringement is one to be established by the clear preponderance of evidence required in other cases of tort. It is the duty of all persons to respect the rights of patentees. An act of infringement is a legal wrong —a tort. A charge of such an act must be proved by a clear preponderance of evidence. If that is not found in the proofs, the finding must be for the defendant. There are many cases to this point. For instance, in *Fried. Krupp Aktien-Gesellshaft* v. *Midvale Steel Co.,* 191 Fed., 588 (C. C. A., 3d Cir.), which was a suit on a series of armor plate patents, Judge Buffington said on page 591 of the report:

> "Infringement is not only a question of fact, but is a tort or wrong, the burden of establishing which, as in all torts, clearly rests on those who charge such wrong. The absence of actual fact proof is not met by the presence of expert speculations no matter how voluminous."

In *Bene* v. *Jaentet,* 129 U. S., 683, the suit was on a patent for refining and bleaching hair. All the testi-

mony before the court on the point in dispute was that of two experts, one of whom testified to facts within his knowledge, and the other to theories on the subject. There is substantially the same difference here. The evidence for the defendant rests on ascertained and demonstrated facts, measurements and tests; that for the plaintiff on theory and asseveration. The court by LAMAR, J., said, on page 688:

> "We think the complainants did not make out a case of infringement. There is not a preponderance of evidence in their favor."

See, also, Walker on Patents, sec. 522 and cases cited.

3 Robinson on Patents, sec. 1041, where an immense number of cases are gathered together.

The same principle applies to this petition for rehearing. If, upon the whole case which we submit the court is in doubt whether our petition ought to be granted or not we claim the benefit of the doubt.

We wish to add a few last words upon what we regard as the most important part of this brief. It is the applicability to the case of the decision of the Supreme Court in *Westinghouse* v. *Boyden Power Power Brake Co.,* 170 U. S., 537. We are bound to assume, of course, that this court will defer to authority. The Westinghouse case has never been overruled. On the contrary, it has been followed by Courts of Appeals and District Courts many times. It stands as

one of the great landmarks of the patent law. The only question we need discuss is its applicability to the facts in this case.

That depends upon whether or not the Deister table contains in its structure and operation the elements of a new invention as compared with the Wilfley. It is a curious circumstance that our proofs in the record on that subject are without a word of contradiction. Take, for example, the matter of comparative areas of concentrating surface—78 square feet on the Wilfley, 36.6 on the Deister. If those figures are not correct it would be perfectly easy to disprove them. As no attempt was made to do that they must stand as absolute truth. Then one would naturally suppose that the smaller table would do less work than the other. We proved the contrary. The Superintendent of the great mills at Morcenci, using both tables, testified that he made no distinction between them in that respect, but gave them the same load. If that were not true it could have been disproved. It was not, and so must be taken as truth.

There must be a reason. There are many of them. They are found in the elements of new invention embodied in the Deister. There are the high riffles with the pools formed above them. There are the step-downs by which the riffles are reduced in height from point to point to accomodate them to the conditions of the material in the successive stages of its concentration. There is the arrangement of riffles by which the particles of mineral dropped in a riffle trough stay in that trough to its end, and, at the end of it,

at the moment of final washing-up are combined with those of an adjacent trough and the output of the two troughs pass into the concentrates box. One of the important features of the table is its working position, by reason of which the concentrates have to travel uphill under the impulses of the reciprocating movement from the time they start. There is no controversy about these features of the table. They are all earmarks of invention—of the wise adaptation of means to ends. That it was a successful invention the result shows—16 per cent more copper from the same pulp.

We cannot help feeling confident that the court will give us a re-hearing on this point if on no other.

Respectfully submitted,

R. S. TAYLOR,
E. M. HULSE,
For Petitioners.

United States
Circuit Court of Appeals
For the Ninth Circuit.

THE DETROIT COPPER MINING COMPANY OF ARIZONA, a Corporation, AND THE ARIZONA COPPER COMPANY, a Corporation, *Defendants-Appellants,* vs. THE MINE AND SMELTER SUPPLY COMPANY, a Corporation, *Complainant-Appellee.*	No. 2291.

Appeal from the District Court of the United States for the District of Arizona.

REPLY TO APPELLANTS' PETITION AND BRIEF FOR REHEARING.

The appellee in the above entitled causes respectfully submits that a rehearing thereof should not be granted upon the Petition for Rehearing filed therein by the appellants, and in support of appellee's opposition there-

to we respectfully venture the statement that neither the petition presented, nor the argument and citations from the records and the law accompanying the same and in support thereof, present any new or forcible ground indicating such a palpable mistake or overlooking of material facts in the record on the part of the Court as should warrant or move the Court to grant a rehearing as requested.

The statement of the case and decision of the Court as embodied in its opinion filed herein, necessarily indicates that the records and briefs in the case have been carefully studied and comprehended, and out of the maze of statements, arguments and citations contained in the briefs filed by counsel for appellants, tending to lead the Court far afield and cover up and obscure the very essence of the controversy, this Court has discerned the indisputable and controlling facts of the case, and arrived at the exact and only just conclusion that "the appellants have availed themselves of the distinctive feature of the Wilfley table, and therewith they have performed the same function by the same means, and in substantially the same manner as in the Wilfley combination" (Conclusion of the Court's Opinion).

We cannot find a pertinent proposition in the appellants' Petition for Rehearing, the substance of which in the same or possibly slightly varied form of argument, has not already been advanced and discussed and dwelt upon at great length in the briefs filed by counsel for appellants before and after the case was submitted and prior to determination, and in view of the presentation of the case of the appellee in its brief first filed herein,

wherein it was sought to state clearly and concisely the position of the appellee, and the proofs, authorities and precedents in support thereof, in our judgment a mere reiteration or elaboration thereof as a response to the appellants' Petition and Brief for Rehearing would be an imposition upon the time and patience of this Court, and would not serve to further enlighten the Court.

In two particulars only do we care to add anything further by way of reply to the Petition and Brief for Rehearing than we have already contended for and answered in our brief first filed (to which we respectfully refer the Court for such further perusal as it may desire), and that is in connection with the great and repeated emphasis with which counsel again and again state their claims for recognition by this Court of the cases of Railway vs. Sayles, 97 U. S., 554, and Westinghouse vs. Boyden Power Brake Co., 170 U. S., 537, and the line of authorities following each respectively, as enunciating doctrines and principles of law controlling in and decisive of these cases at bar.

As again answering the contentions based upon the case of Railway vs. Sayles, and cases following, we refer to our original brief, pages 96-98. We make no controversy over the doctrines of that and similar cases as applied to the facts involved, which we do again say widely differ from those of the cases at bar.

Regarding the case of Westinghouse vs. Boyden etc., which counsel for appellants insist is and must be controlling herein, unless its applicability to the facts of these cases at bar can be differentiated, we will say, that the quotations given by counsel from the case, and

from those cases cited as following the doctrine thereof as there laid down, seem to clearly point out those cases in which the doctrine is applicable, and distinguish those in which it is not, so that we can easily determine that the doctrine is clearly inapplicable to the facts of these cases at bar. We need only to quote in "caps," and by so doing further emphasize the italics of the quotation first appearing on page 31 of appellants' Petition and Brief for Rehearing, and then apply the test to the Deister tables here involved—Has Deister "SO FAR CHANGED THE PRINCIPLE" of the Wilfley invention and table that he can escape the charge of infringement under the law of the Westinghouse case?

The testimony is abundant and conclusive that Deister *has not "So far changed the principle"* of the Wilfley invention as to escape infringement, but on the contrary, that he retains and appropriates the means substantially, and operates his table upon the same principles and performs the same functions in substantially the same way as the Wilfley table. The cases following the Westinghouse case all emphasize this "change of principle" test in the device of the later invention from the earlier invention by which under the facts of each particular case infringement may be avoided.

We believe counsel discredit their own citation of the Westinghouse case in dwelling with so much emphasis and particularity upon the so-called improvements and inventions making the Deister table superior to the Wilfley table, as for example, that the Wilfley table deck contains 78 square feet to the 36.6 square feet for the Deister. Conceding, for sake of argument, that this and

other features referred to may be improvements over the Wilfley, and an increased efficiency in various ways result from the adding to or taking from the *form* of Wilfley construction, it is all quite immaterial, for the indisputable fact remains that the Deister has appropriated all of value in the Wilfley invention, and with all of the claimed improvements *has made no change in principle*, and this Court is fully sustained by the facts in so finding.

We again submit that there are no good reasons presented to entitle appellants to a rehearing of these cases.

Respectfully submitted,

GEORGE L. HODGES,
D. EDGAR WILSON,
Solicitors for Appellee.

IN THE

UNITED STATES CIRCUIT COURT OF APPEALS

FOR THE NINTH CIRCUIT

Detroit Copper Mining Company of Arizona, a Corporation,

Appellant,

vs.

The Mine and Smelter Supply Company, a Corporation,

Appellee,

and

Arizona Copper Company, a Corporation,

Appellant,

vs.

The Mine and Smelter Supply Company, a Corporation,

Appellee.

No. 2291

REJOINDER TO APPELLEE'S REPLY TO APPELANTS' PETITION FOR RE-HEARING

We have received from counsel for the appellee a printed reply to our petition for re-hearing in this case. This is the first time in a rather long experience in such matters that we have known a reply to be filed to a petition for re-hearing. But we make no objection to it provided the court will entertain our rejoinder to it, which we think it ought in justice to do.

We are at such a distance from the court that this paper may not arrive within the time allowed us for our petition for re-hearing, although it was extended ten days by the courtesy of the court. If it should not, we shall beg the court to read it nevertheless.

Counsel say on page 3 that "In two particulars only do we care to add anything further by way of reference to the Petition and Brief for Re-hearing than we have already contended for and answered in our first brief filed, and that is in connection with the great and repeated emphasis with which counsel again and again state their claims for recognition by this court of the cases of *Railway* v. *Sayles,* 97 U. S., 554, and *Westinghouse* v. *Boyden Power Brake Co.,* 170 U. S., 537, and the line of authorities following each respectively."

Counsel then refer to pages 96-98 of their former brief for their argument on *Railway* v. *Sayles.* Turning to those pages of the brief we find a criticism of *Railway* v. *Sayles.* On page 97 counsel say "A careful reading of the Sayles case renders it apparent that the court was dealing with inventions which had to do with forms, the improvements made consisted of better forms for doing the same thing. They involve no new functions, the application of no new principles." And on page 98 they say this: "It is not true that the invention of the Wilfley patent inheres in an improved or better *form* for doing the same thing. It consists of securing better results by applying new principles and new functions." What short memories counsel have. Let us refer them again to the words of their

own complaint. They are on the last 7 lines of page 27 and the first 6 lines of page 28 of the printed record in these words:

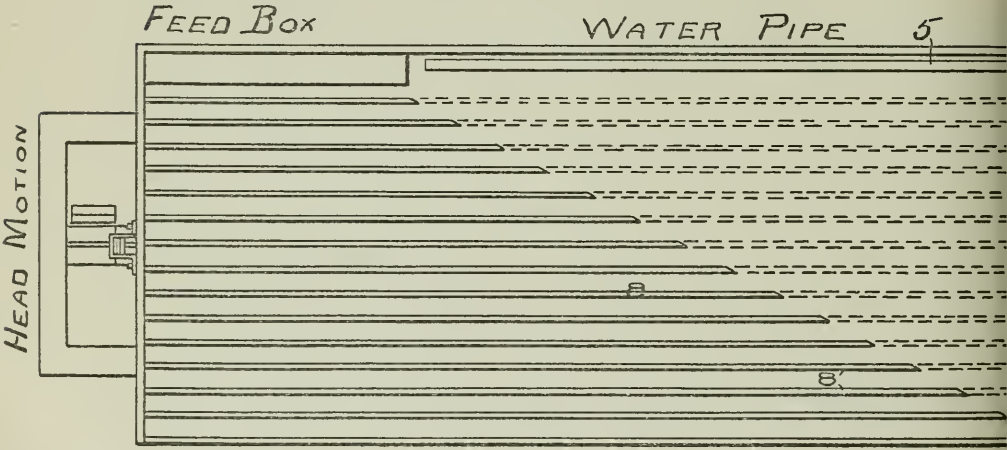
> "And thereafter the same (the Deister tables) were used, and continuously ever since and still are being used in the concentration of ores by said defendant at the place aforesaid, with certain riffles upon the tops or concentrating surfaces thereof, which in their construction, adjustment and arrangement upon said table surfaces substantially embody and contain the improvements and invention so patented to the said Arthur R. Wilfley as aforesaid by said hereinbefore described letters (30) patent No. 590,675, now owned by your orator as aforesaid, and especially the improvements covered and protected by the first, second, and seventh claims of said letters patent."

What is this but a matter of form—"the construction, adjustment and arrangement of riffles" on a concentrating table deck.

Furthermore we did not cite *Railway* v. *Sayles* alone, but *McCormick* v. *Talcott* and fifteen other cases following them and applying the same rule of narrow construction to as many different patents, including such inventions as washboards; coffee mills; overalls; coal scuttles; soldering irons; friction clutches; dating stamps, and harness hooks—all inventions resting in form. Every one of these decisions is entitled by itself to recognition as authority in this court. Were we not justified in feeling somewhat aggrieved that the court took no notice of them whatever? In their reply to our petition counsel merely refer to what they said in their original brief on these

cases, and in that they did not come within a thousand miles of meeting them.

We beg the court to notice how restricted this issue is. There are things about these tables which do not consist in mere form. There is machinery located under each of the tables by which the reciprocating movement is imparted to it which is not matter of form in any sense except that in which all machinery is matter of form. But the mere construction, adjustment and arrangement of riffles on the surface of a concentrating table deck is as pure matter of form or configuration as can be imagined. We would like to illustrate that idea by a little drawing. Here is the



Wilfley table deck with no change except to extend its riffles as indicated by the dotted lines straight on to the foot instead of cutting them off along a diagonal line as shown in Fig. 3 of the patent. This little change of form or configuration of the table surface has made a new table out of it. Counsel have much to say about

the "principle" embodied in the Wilfley table. What is it? The washing-up function performed along the diagonal line of riffle tips and on the smooth space adjoining them. That function is not present in this modified form of the Wilfley table. That is to say, the principle disappeared with a slight change of configuration of surface. The meaning of all this is that all inventions consisting of new arrangements of riffles on concentrating tables are inventions resting in *form,* and so fall directly within the cases cited in our original brief following *Railway* v. *Sayles* and *McCormick* v. *Talcott.*

But the questions to which we wish to draw particular attention now are those which arise upon the case of *Westinghouse* v. *Boyden Power Brake Co.* Counsel in referring to that case on page 4 of their reply to our petition make a very inadequate statement of it. Our statement of the proposition for which we relied upon it on page 31 of our petition for re-hearing was (italics and all) "but if the latter (the defendant) has *so far changed the principle of the device* that the claims of the patent literally construed have ceased to represent his *actual invention,*" and so forth. But the italics are not in the court's statement of the rule as embodied in the report. The unemphasized language of the court is this:

> "The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual

> invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent." 170 U. S., 568.

The binding authority of this decision cannot be impugned. The only question is whether the claims of the Wilfley patent, literally construed, represent the actual invention present in the Deister table, or does it embody a new invention over and beyond the invention embodied in the Wilfley patent? The facts necessary to be understood here cannot be presented in a few words. The court must completely understand the Deister table or it cannot form any just judgment of the bearing of the Westinghouse case on the issue here. It is impossible for us to describe it here in the time and space open to us, and so we beg the court to read again pages 16 to 24 inclusive, of our original brief. With that description of the Deister table in mind the court will be in situation to appreciate what we have to say about the Westinghouse case.

The Wilfley patent was granted Sept. 28, 1897. This suit was begun Feb. 24, 1910. The Wilfley patent was then over 12 years old. The Deister table had just come out. It had not then been patented. Was it not to be expected that there would be some advance in the art in that interval? Let us point out some features in which the Deister table exhibited an unquestionable advance. The first of these is its few high riffles dividing the others into groups. The function which they perform of creating pools above them which flood the riffles between them each about

half way to the next high riffle above is a unique and valuable feature of the table. There is nothing like it on the Wilfley table. It greatly accelerates the process of concentration. Does it not represent invention? Suppose it be conceded that the claims of the old Wilfley patent literally construed would cover it. Is it not a case in which the defendant "has so far changed the principle of the device that the claims of the patent literally construed have ceased to represent his actual invention?" The change in principle is the introduction of the principle of cutting up the surface of the table into pools covering about half the surface and so doing about half the work of concentration by submerged riffles. That construction is his "actual invention."

Then there is the washboard, by which a thin film of water is kept constantly flowing down to meet the concentrates at the last minute before they leave the table and give them their final washing-up, and which is all the water used on the table. That is another feature of "actual invention."

Then there is the position of the table in operation. It has first, a general declivity from head to foot. That takes the mass of the pulp directly across the riffles to the tailings discharge by the longest dimension of the table. At the same time the table slopes upward across its shorter dimension to the concentrates discharge. The result is that the concentrates are traveling uphill from start to finish. All the metallic particles that gravitate to the bottom of each riffle trough stay there and follow it to its termination.

The reciprocating movement is thus pulling the concentrates away from the sand all the time. The result is a rapid and complete separation of the two.

It ought to follow from these combined features that the Deister will do more concentration to the square foot of surface and do it more perfectly than the Wilfley. And it does. We referred the court in our original brief and our petition for re-hearing to the pages in the record where Mr. Hunt testified that the concentrating surface of the Deister table was only 36.6 square feet while the Wilfley was 78 and yet he gave them the same load. We also referred to a critical comparative test of the two tables in which the Deister came out far ahead. The significance of these comparisons is that they confirm the fact that the young little Deister represents an advance in the art over the big old Wilfley. Counsel do not deny these facts. They can not. The proof is in the record. What do these facts mean? In this last utterance of theirs—their reply to our petition for re-hearing, the only answer they have to make to them is this silly remark "We believe counsel discredit their own citation of the Westinghouse case in dwelling with so much emphasis and particularity upon the so-called improvements and inventions making the Deister table superior to the Wilfley table, as for example, that the Wilfley table deck contains 78 square feet to the 36.6 square feet for the Deister."

But we have here the remarkable phenomenon of the little surface doing as much work as the larger one and doing it better—getting over twenty-five per cent

more mineral out of the same pulp. THERE'S A REASON. WHAT IS IT? Counsel don't pretend to give any. We have given it. It is the features of *new invention* present in the Deister table which we have described—the combination of high and low riffles, the new form of water supply, the new way of washing-up, the position of the table at work. These are elements of "actual invention" which the claims of the Wilfley patent "have ceased to represent." They exhibit the very situation defined in the Westinghouse case—a young invention caught by the literal words of the claims of an old patent, where, as the court says "he is as little subject to be adjudged an infringer as one who has violated the letter of a statute is to be convicted, when he has done nothing in conflict with its spirit and intent."

The court can not deny us a re-hearing without disregarding the Westinghouse case.

To all this and all other arguments counsel have just one final answer, which is the "principle" said to be embodied in the Wilfley table—*the principle,* THE PRINCIPLE, THE PRINCIPLE. They have kept repeating these words for four years with the never ending iteration of a parrot's "Polly wants a cracker." What is that principle? It is the washing-up process of the Wilfley table along its diagonal line of advancing riffle tips adjacent to a triangular smooth space. Counsel have pointed out no other. There is no other. That may be called a principle within the meaning of the patent statute, and is a fairly good way of per-

forming that function, but it is not the only way, nor the best way, as we have proved by evidence which counsel have not tried to answer. We hope the court will give no further heed to that fetish.

The weakness of counsel's reply to our petition is as consipcuous in its omissions as in the blunders we have pointed out. They say not a word about the Lampert patent. That patent was granted Jan. 29, 1895. It was over two years and one-half old when the Wilfley patent was issued. On pages 36 and 37 of our petition for re-hearing we pointed out the exact similarity in construction and operation between the Lampert and Deister tables. Counsel offered no answer. We hope the court will take more notice of it.

If we are liable for infringement in this case it must be for infringement of the *Wilfley patent,* not for imitation of the Wilfley commercial table. On pages 46 to 49 of our petition for re-hearing we show that the Wilfley patent is limited in terms to metallic Z-bar riffles. Counsel have offered no answer to that argument. We hope that the court will treat it more courteously.

If the court has read our petition for re-hearing, and the appellee's reply to it and this rejoinder we cannot but feel that there must be some doubt in its mind as to the correctness of its decision in this case. We crave the benefit of that doubt.

Respectfully submitted,
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